THE IMPACT OF VENTURE CAPITAL FUNDING ON THE GROWTH OF SMALL HIGH TECHNOLOGY MANUFACTURING FIRMS IN THE UNITED KINGDOM: A REGIONAL COMPARISON OF FIRMS LOCATED IN THE SOUTH EAST OF ENGLAND AND SCOTLAND

HEATHER IRENE MARY WILSON

DOCTOR OF PHILOSOPHY

HERIOT-WATT UNIVERSITY

DEPARTMENT OF BUSINESS ORGANISATION

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ABSTRACT

This thesis is a theoretical and empirical study of the impact of venture capital funding on the growth of small high technology manufacturing firms located in the South East of England and Scotland.

In order to set the research in context, information is provided on the history of investment finance, public sector involvement in high technology companies and venture funding, and the emergence and structure of the United Kingdom venture capital industry vis-a-vis the United States example. This literature review, along with a consideration of the issues which prompted the research, lead to the formulation of seven principal hypotheses.

These hypotheses are tested by means of data generated from two surveys, a postal questionnaire and personal interviews, both involving manufacturing firms in the high technology study industry. This information is supplemented by qualitative interviews with a small number of venture capital organisations.

The principal areas of investigation include: the use of external finance, in general terms, by survey firms; the distribution and impact of venture capital finance within the study industry; and the unique role played by venture capital organisations in relation to other financial services. Explanations are also offered for the pattern of venture capital distribution according to the business plan content, and the attitude of the main founder towards ownership and control of the company.

Finally, the thesis offers some conclusions and recommendations for theory, practice and policy based on the comparison of theoretical and empirical issues. Principally, these require a re-structuring of the United Kingdom venture capital industry.

Chapter 1

INTRODUCTION

Venture capital funding traditionally involves the provision of long-term equity, rather than loan capital, to high risk ventures which are too small to be considered for a public listing. The venture capitalist will provide further input by participating in the management of the venture, ensuring that the company has every opportunity to grow and, thus, adding value to the investment. If everything goes to plan, the investee company will grow to the point where it becomes eligible for a public listing. The investor then receives a substantial return on the capital invested when all, or part, of his shareholding is sold on the financial market.

Or, put in more general terms:

> "... 'venture capital' investment is used to describe a way in which investors support entrepreneurial talent with finance and business skills to exploit market opportunities, and thus to obtain long-term capital gains," (Shilson, 1984, p207).

Venture capital funding is entirely different from established institutional sources of finance. However, the venture capital industry is more remarkable for the role it has played in the

proliferation of new businesses, financing a disproportionate share of rapidly growing companies, especially in high technology sectors. These new and growing businesses then contribute to the economic prosperity of a nation by providing, inter alia, new jobs, tax revenues and export sales. Evidence on the importance of the venture capital industry to technology funding and economic growth first emerged in the United States where Pratt (1982) observed that:

> "The imagination, boldness, and energy of entrepreneurs and small business owners, combined with the persistence and involvement of experienced venture capital investors, has often led to the creation of new industries and new technologies, which in turn have increased the productivity of the nation's economic process and of its workers," (pXV).

The principal objective of this thesis is to investigate the United Kingdom venture capital industry and its impact on the formation and growth of small high technology manufacturing firms. This work originated from three major observations. First, venture capital funding in the United Kingdom did not appear to be of a type or extent similar to the venture capital services available in the United States. Second, there was an indication that venture capital organisations in the United Kingdom were not assisting small high technology manufacturing firms to any significant degree. Third, venture capital providers and investments appeared to be concentrated in the South East of England to the possible detriment of other regions in the United Kingdom. This study, therefore, aims to establish whether venture capital providers in the United Kingdom are venture capitalists in a true sense, based on the definition given above, and to uncover any geographical variations in the extent of the provision made by such organisations.

This thesis comprises three sections. The first section considers general theoretical issues in relation to the topic of research: Chapters 2 and 3 detail and comment on the public and private sector sources of investment finance available to small firms, both historically and presently; and Chapter 4 considers the development of the United Kingdom venture capital industry in relation to the venture capital example of the United States. Chapter 5 explains and justifies the survey design and methodology used to collect the empirical data of this research. Chapters 6 through to 10 comprise the empirical section which presents the results of the data analysis. In particular, Chapter 6 investigates the sources of investment finance, other than venture capital, utilised by survey companies. Chapter 7 evaluates the general distribution and impact of venture capital finance on the study industry. Chapters 8, 9 and 10 then investigate specific issues affecting the take up of venture capital funds; mainly an anlaysis of the use of business plans as screening instruments by venture capital organisations, the ethos of the founding entrepreneur with regard to ownership and control of survey firms, and the effect of market forces on venture capital provision in the United Kingdom. Conclusions and recommendations are included in the final chapter, Chapter 11.

At a general level, this study contributes to the body of knowledge concerning the operations of the venture capital industry in the United Kingdom. On a more specific level, the analysis offers explanation for both the extent of venture capital provision available to firms in the same sector of high technology industry in two very different regions of the country, and observed differences in the propensity of entrepreneurs to apply for, and obtain, venture

capital funding. Moreover, the conclusion to this thesis offers policy recommendations, based on a comparison of theoretical issues with the empirical results, in order to suggest measures which will encourage future venture capital investments in the small high technology business sector.

Chapter 2

A HISTORY OF INVESTMENT FINANCE IN THE UNITED KINGDOM PRIOR TO 1971

2.1 INTRODUCTION

The primary objective of this chapter is to provide the reader with contextual information surrounding the history of the venture capital industry in the United Kingdom prior to the Bolton Report in 1971. The more recent "post-Bolton" development of this important new sector of investment finance is then considered separately in Chapter 4. This evaluation of the historical sources of investment capital available to entrepreneurs will contribute to an understanding of the decision-making processes involved in obtaining external funds over the years.

The following discussion benefits from information obtained from three major government studies and publications covering a wide time-span. In chronological order these are: the Macmillan Report (1931) which conducted a study on Finance and Industry; the Radcliffe Committee, which was concerned with the Working of the Monetary System and reported in 1960; and the Report of the Committee of Inquiry on Small

Firms (1971) which was chaired by John Bolton. Between them these reports provide a comprehensive review of the evolution of the financial environment for the small firm at regular intervals over a forty year period. In addition, small high technology firms are singled out for special attention in the Radcliffe and Bolton Reports, and policy recommendations are made in order to assist such enterprises.

2.2 THE SITUATION PRIOR TO THE MACMILLAN REPORT (1931)

The following is a brief overview of the financing of industry in the United Kingdom in the years between the industrial revolution of the 18th Century and the publication of the Macmillan Report in 1931, the first government review concerned with the operation of the financial market. Initial sources of capital available to entrepreneurs seeking to establish firms in the late 1700s depended upon the economic and social backgrounds of these individuals (Cottrell, 1980). That is, the evolution of manufacturing industry in the United Kingdom owed much to the fact that founders of companies held personal wealth due, in part, to belonging to the propertied classes. These entrepreneurs were also able to avail themselves of further sources of investment funds, namely the savings of relatives and friends (Cottrell, 1980). By the beginning of the 19th Century, industrial concerns were an important source of revenue to landowners (Cottrell, 1980) and the necessity to manage this wealth led to the beginnings of a nationwide private banking system (Lawrence, 1988).

A number of independent banks were formed by industrialists to meet their need for wage payments to employees, usually in the form of tokens or promisory notes, since actual currency was in short supply in the early 1800s (Cottrell, 1980). The manufacturer was not only able "... to satisfy his own financial requirements but by providing banking services to the public, especially through deposits, could augment the resources of his manufacturing enterprise," (Cottrell, 1980, p14). However, these industrialists tended to borrow long term finance from their own banks, which led to their eventual failure (Cottrell, 1980). Presumably the payback period on the industrial investment to the banker/entrepreneur proved too long to support the short-term requirements of meeting wage and creditor payments, although these banks did appear to perform well as sources of short-term credit.

In the latter half of the 19th Century other sources of industrial investment finance were the limited joint stock banks, formed as a result of government legislation, which were very similar in operation to the private banks (Cottrell, 1980). Industrialists also had the option of applying for funds from the established London capital market, which had originated from the financing of international trade and commerce prior to the industrial revolution (Macmillan Report, 1931). However, the City-based bankers saw their role as agents to the growing number of independent banks, both private and joint stock, in the newly emerging industrial regions of the North, and "... the development of this correspondent system ... transformed the unit country banks into a national banking system," (Cottrell, 1980, p14). By the end of the First World War, five major institutions had virtually oligopolised the United Kingdom banking market; namely

Barclays Bank, Lloyds Bank, London County Westminster and Parr's Bank, London Joint City and Midland Bank, and the National Provincial and Union Bank of England (Thomas, 1978).

It is not clear to what extent the early country and joint stock banks fulfilled the role of providing long-term finance to established manufacturing concerns. However, Cottrell (1980) stated that bankers in the late 1800s only rarely provided long-term capital to newly established enterprises. By the turn of the century, however, criticism was also levelled at existing financial institutions for their failure to provide credit to both existing and new industrial firms (Cottrell, 1980). This contrasted with the banker/industrialist relationship emerging at the same time in Europe, most noticeably in Germany. According to the Report of the Macmillan Committee (1931), the banks in Germany were compelled by the lack of private resources and public sector assistance to provide permanent capital for industrial development through new business formation in order to compete with manufacturing industry in the United Kingdom. Industrialists in the United Kingdom, however, had recourse to tap the savings of independent local investors which continued to be an important source of long-term capital throughout the 19th Century and very early 20th Century (Macmillan Report, 1931). This investment structure was soon to change.

An article in the September 1937 edition of The Economist pointed out that:

> "Before the war, the small industrial undertaking obtained a very large proportion of its finance without making a general appeal to the public. From choice or necessity, industrialists now deem it worth their while, in the periods when the market is

> active, to turn family businesses into public companies with widely diffused shareholdings," (p508).

Thomas (1978) illustrated those factors which contributed towards the emergence of the domestic new issue market after the First World War. On the demand side, businesses were growing in terms of their optimal size, sources of local private capital had largely disappeared, and there was no facility for distributing the profits from one organisation to other existing or new enterprises. On the supply side, increases in personal taxation levels after the war resulted in a reduction in the level of savings by local private investors. Those savings that were available for investment tended to be deposited with the growing number of formal financial institutions concerned with investment, such as pension funds, unit trusts and insurance companies. At this time, investors also demonstrated a preference for holding in quoted firms shares which could be readily traded on the market. The overall effect of these changes was to separate the ownership and management of the organisation as Scott and Hughes (1980) illustrate:

> "Managerial restructuring was associated with a transformation in the pattern of ownership. Family shareholders were gradually reduced as a larger proportion of shares were sold through the stock exchange or sold to other interests. Many of these shares eventually found their way into the hands of the insurance companies, investment trusts, unit trusts and pension funds which became the major source of capital from the 1920s onwards. These financial 'institutions' mobilised the resources of large numbers of beneficiaries and invested the funds in company stock and became the most significant feature of the post-war capital market," (p259).

The investment trusts of this period were largely accredited as the original venture capital organisations in the United Kingdom, especially those which maintained an investment strategy linked to risk-embracing entrepreneurs (Clark, 1987). However, many of these institutions quickly became less risk-oriented and more concerned with quoted companies (Radcliffe Report, 1960) and the new issue market dominated the industrial investment finance scene by the time of the Macmillan Report in 1931.

2.3 THE MACMILLAN REPORT (1931)

In the opinion of the Macmillan Committee on Finance and Industry in 1931, the banking system, as it existed then, provided sufficient short-term finance to industry. Indeed, the report even indicated that this type of finance might be too freely available. There was also little criticism of the role played by the banks in the provision of medium-term capital; that is, finance provided over a period of anywhere between two to five years. However, the committee singled out for criticism the contribution of the financial institutions to the long-term funding of industry in the United Kingdom. The relevant paragraph of the report argued as follows:

> "Coming back now to the more general question of the relations between finance and industry, and in particular to the provision of long-dated capital, we believe that there is substance in the view that the British financial organisation concentrated in the City of London might with advantage be more closely co-ordinated with British industry, particularly large-scale industry, than is now the case; and that in some respects the City is more highly organised to provide capital to foreign countries than to British industry. We believe this to be due in part to the historical organisation of British Industry and to the fact that industry, having grown up on strongly individualistic lines, has been anxious to steer

> clear of anything which might savour of banking control or even interference, this attitude coinciding with the views which prevail in this country as to the province of sound banking," (Macmillan Report, 1931, p171).

This would explain the observation by Thomas (1978) that the new issue market enabled firms to reduce their reliance on bank funding. Indeed, the then Chairman of the Midland Bank pointed out that "money raised by new issues of capital had been used to pay off millions of bank advances," (Thomas, 1978, p71). However, this option was available only to larger manufacturing enterprises, since a major finding of the Macmillan Committee was that:

> "... great difficulty is experienced by the smaller and medium-sized businesses in raising the capital which they may from time to time require, even when the security offered is perfectly sound. To provide adequate machinery for raising long-dated capital in amounts not sufficiently large for public issue, i.e., amounts ranging from small sums up to say £200,000 or more, always presents difficulties. The expense of a public issue is too great in proportion to the capital raised, and therefore it is difficult to interest the ordinary investor by the usual method; the Investment Trust Companies do not look with any great favour on small issues which would have no free market and would require closely watching; nor can any issuing house tie up its funds in long-dated capital issues of which it cannot dispose," (Macmillan Report, 1931, p173-174).

Thus, the Macmillan Committee revealed that the long-term investment capital needs of small and medium-sized firms were not catered for by the financial market; this became widely known as the "Macmillan Gap." For example, companies which were unable to raise amounts of up to £200,000 from their own resources also found that this amount was too small to warrant a public market listing (Macmillan Report, 1931). This lower limit to flotation had not changed by 1959, according to the minutes of evidence of the Radcliffe Report (1960). However, the Bolton Report in 1971 stated that the new issue market could only in

reality support capitalisations of £250,000 or above. The International Stock Exchange more recently quoted a figure of £700,000 as a minimum for public issue, but stated that sponsors preferred a minimum market capitalisation of over £10 million (ISE, 1988/89).

The Macmillan Committee made a number of suggestions based on the evidence of their deliberations, and foremost amongst these was the recommendation to establish an institution which was solely concerned with small industrial and commercial issues in order to fill the "Macmillan Gap." Paragraph 403 of the Macmillan Report (1931) suggested the form that this new institution might take:

> "While, however, we do not propose a change in the character of present banking practice, we think that the co-operation of the big banks is required both in taking an interest in the share capital of such an institution and being ready to provide such credit facilities as the institution may require pending a public issue. The best course might be if the leading private institutions and the big banks were to co-operate in creating one or more such concerns," (p173).

2.3.1 Response to the Macmillan Report

A formal organisation of the kind suggested by the Macmillan Committee was not to see the light of day until 1945 when the Industrial and Commercial Finance Corporation Limited (ICFC) was established (Thomas, 1978). Meanwhile, a number of City-based institutions seized the opportunity to fulfil a quasi-venture capital role and specialise in the provision of long term finance to small firms (Thomas, 1978). Three institutions dominated this market; Charterhouse Industrial Development Company Limited founded in 1934, Credit for Industry also established in 1934, and Leadenhall Securities Incorporation which was formed in 1935 (Bolton Report, 1971). According to Thomas (1978) these financial institutions only had a limited amount of funds which

proved insufficient to meet the capital demands from small businesses. However, before World War Two, they were very often the only source of long-term capital available to small firms in need of investment funds.

During the Second World War a Steering Committee on Post War Employment recommended that a new insitition be formed, similar to that proposed by the Macmillan Committee, in order to facilitate industrial reconstruction after the war (Thomas, 1978). To this end, the Industrial and Commercial Finance Corporation Limited was established with the combined finances of the clearing and Scottish banks and the Bank of England (Bolton Report, 1971). The mission statement of this new institution was to:

> "... 'provide credit by means of loans or the subscription of loan or share capital or otherwise for industrial and commercial business or enterprises in Great Britain, particularly in cases where the existing facilities provided by banking institutions and the Stock Exchange are not readily or easily available,'" (Thomas, 1978, p123).

The Industrial and Commercial Finance Corporation was supported financially by the major banks, and the Radcliffe Committee maintained that "... they [banks] are thereby doing indirectly business which they would not normally do directly," (p291). Essentially, banks preferred to be creditors to their clients rather than business partners (Radcliffe Report, 1960). It would appear that the banks were not comfortable with their relationship with the Industrial and Commercial Finance Corporation, so much so that they decided that the corporation should look to the open market for its sources of finance. As it emerged, the financial institutions took up much of the share issue resulting from the first public issue in 1959 (Thomas, 1978).

According to Lord Piercy, the Chairman of the Industrial and Commercial Finance Corporation in 1960, the corporation was prepared to consider small investment amounts of even £5,000 to £15,000. Lord Piercy considered these investments to be an integral and substantial part of the operations of the institution. The justification for this policy was contained in his statement to the Radcliffe Committee:

> "It is rather the feeling that, if there is a need for money which they [small firms] cannot raise conveniently elsewhere and there is a case for them having the money, then we ought to provide it. Of course, a loan from us of £5,000 or £10,000 makes a concern happier and in turn enables them to get more facilities from the bank. So that in that way we are probably doing more than £5,000 worth of good in loaning £5,000," (Radcliffe Report, 1960, p886).

This lending policy of the Industrial and Commercial Finance Corporation also took into account the "Gap" identified by the Macmillan Committee since, initially, the Corporation could lend amounts <u>up to</u> the £200,000 identified as the lower limit for flotation purposes (Thomas, 1978). The research and development financial needs of small <u>innovative</u> firms were also considered to be catered for by the government funded National Research and Development Corporation (NRDC) established in 1948 (Radcliffe Report, 1960). This organisation provided investment capital in two forms: equity capital in return for a minority stake in the business; or, loan capital which was repaid by means of a negotiated levy on sales (Thomas, 1978).

2.4 THE RADCLIFFE REPORT (1960)

Until the time of the Radcliffe Report there were three major institutions attempting to fill the funding gap identified by the Macmillan Committee. These were the private enterprise Charterhouse Industrial Development Company, first referred to in Subsection 2.3.1, the Industrial and Commercial Finance Corporation and the National Research and Development Corporation, mentioned above. These three organisations encompassed the range of private through to public equity funding available to small companies. Nevertheless, the Radcliffe Committee found that the lack of innovation funding for small technology-related firms was still a problem at the time of their investigations. Thomas (1978) commented that:

> "In terms of the provision of ... venture capital the Radcliffe Committee identified two problems; firstly, that the needs of such [innovative] companies may be large in relation to their existing capital structure and earning prospects, larger in fact than most institutions would accept, and secondly, the increased risks attached to the commercial exploitation of technical innovation," (p132).

Criticisms were levelled at the above three organisations in terms of their lending strategies. The Charterhouse Industrial Development Company chose to invest in the form of loan capital rather than through equity participation, and concentrated on existing rather than new enterprises (Thomas, 1978). The Industrial and Commercial Finance Corporation did not publicise its operations well enough to industry, relying predominantly on the banks to recommend the services of the corporation to their clients, and it failed to allay fears about the amount of participation and control it would require as a result of investing in a firm (Radcliffe Report, 1960). This latter criticism was also applied to the National Research and Development Corporation,

since its ownership of commercial rights to inventions caused concern about the issue of control amongst inventors/entrepreneurs (Radcliffe Report, 1960). The Radcliffe Committee believed that all of these criticisms were especially relevant to innovative companies which, perhaps more than any other sector of the business community, had suffered from the disappearance of the personal backer (Radcliffe Report, 1960).

All three organisations are still evident in some form or other in the United Kingdom venture capital industry today. Charterhouse is now a major source of venture capital in the United Kingdom under the name of Charterhouse Development Capital owned by The Royal Bank of Scotland (Cary, 1987). The Industrial and Commercial Finance Corporation went on to form part of the Investors in Industry Group, also owned by the major banks (OECD, 1985). This group has become known as 3i, from the initials of the previous name, and is now the most pervasive investor on the venture capital scene in terms of loan capital with a limited amount of equity funding (Cary, 1987). Finally, the National Research and Development Corporation merged with the National Enterprise Board in 1981 to form the British Technology Group (BTG). Although not a formal venture capital organisation, the British Technology Group is a player on the fringes of venture capital funding (Cary, 1987). Both 3i and the British Technology Group will be referred to in greater detail in Chapter 3 when the availability of investment finance during the 1970s and 1980s will be considered.

Consequent upon their review, the Radcliffe Committee made three main recommendations relating to the financial facilities available to small firms in general, and small high technology firms in particular:

> "First, Radcliffe recommended that the joint stock banks should be ready to offer term loan facilities 'as an alternative to a running overdraft for creditworthy industrial and commercial customers.' Secondly, it was recommended that the upper limit on the size of transactions in which ICFC were permitted to engage 'should be reviewed in the light of the change in the value of money since it was first fixed at a level at which it will once again correspond to the lowest practicable amount for market issue.' Thirdly, Radcliffe recommended the creation of a Corporation 'to facilitate the commercial exploitation of a technical innovation.' As a general point, the Radcliffe Committee suspected that the small business community lacked information on the financial services available through ICFC and its competitors,' (Bolton Report, 1971, p155).

The response to these recommendations is incorporated in the 1971 Report of the Bolton Committee of Inquiry on Small Firms.

2.4.1 Response to the Radcliffe Report

The structural shortcomings highlighted by the Radcliffe Committee were largely corrected over the next ten years. By 1970, many of the banks offered term loan facilities, that is loans which were repayable by instalments over a period of up to ten years; the Industrial and Commercial Finance Corporation was no longer restricted in terms of an upper limit to the amount it could invest; and the organisation Technical Development Capital Ltd (TDC), a subsidiary of the Industrial and Commercial Finance Corporation, was created in 1962 to complement the services of the National Research and Development Corporation by providing capital to small innovative companies for production and market development purposes (Bolton Report, 1971).

Technical Development Capital attracted a great deal of interest from firms in a wide range of high technology industries, and was deemed to be of such national economic importance that it was integrated with

the Industrial and Commercial Finance Corporation in its first few years of operation in order to give the organisation a sounder base (Thomas, 1978). This division of the Industrial and Commercial Finance Corporation became known as 3i Ventures with the change of corporate name to 3i (Lorenz, 1985) and continues to operate as the specialist technological investment arm of the 3i Group (Cary, 1987). A small number of other private financial organisations, recognising the market opportunity presented by the 'Radcliffe Gap' and the formation of Technical Development Capital, established subsidiaries which could specialise in the provision of production/marketing finance where there was a perceived technological opportunity. These organisations included merchant bank and investment trust subsidiaries (Thomas, 1978). Small innovative firms in the United Kingdom also had the opportunity to receive venture capital funds from United States organisations which chose the 1960s to expand their operations internationally (Thomas, 1978).

2.5 THE BOLTON REPORT (1971)

The Bolton Committee commissioned a report to evaluate the effect of changes made during the 1960s to the financial provision for small firms. Despite the intentions of the Radcliffe Committee, the investment finance market for small firms had not improved by the time of the Bolton Report. According to Lees (1971) small firms rarely received term loans from financial institutions; the 1969-1970 Annual Report of the Industrial and Commercial Finance Corporation maintained that the investment activities of the corporation had been curtailed by a shortage of resources; and Technical Development Capital had

offered finance to approximately only six per cent of the firms which had approached the organisation for investment funds. A further study for the Bolton Committee of Inquiry on Small Firms questioned "... whether the existing structure of the finance market is capable of providing ... risk capital" to small firms (Dunning, 1971, p59). According to Bolton (1971):

> "... the market facing the small firm is relatively constricted; there are certain financial facilities available to large firms which are not available to small ones, such as access to the inter-company loan market. Furthermore, for those facilities which are available, small borrowers must frequently pay rather more than large ones; this is true of overdrafts, of term loans, of hire purchase finance and even of equity raised by public flotation. ... we find it is true that the great majority of small firms are unable to raise capital on the stock exchange ...," (p187).

This signified to Dunning (1971) that the financial market for small firms was imperfect and, in some cases, this resulted in the misallocation of resources. Nonetheless, the Bolton Committee maintained that:

> "... in our view there is no imperfection in the supply of finance as it now stands sufficiently serious to warrant either the creation by Government of a new institution or a substantial change in the way existing ones are organised to do business. There is now no gap corresponding to the famous Macmillan Gap. This is not to say that existing institutional arrangements are perfect, still less that every small business will be able to find finance of the type it needs at the price it can afford to pay: but in spite of considerable efforts we have identified no body of legitimate unsatisfied demand significant enough to require radical changes in the market. We are satisfied that if such a demand were to develop, new competing sources of supply would speedily arise to meet it, since few sectors of the economy have shown such vitality, such alacrity in exploiting new opportunities, as the finance market," (Bolton Report, 1971, p188).

An important and, perhaps, unavoidable constraining factor on the free market successfully meeting the investment requirements of small innovative firms is the relative cost of each transaction to the financial institutions. Investments made in small firms are more expensive in proportion to the transaction amount when compared with financing larger companies (Bolton Report, 1971). An illustration of this is contained in a report to the Bolton Committee. According to the National Research and Development Corporation the costs of investigating financial applications at that particular time were as follows:

> "... projects below £10,000, average 25-30 per cent; on £10,000-£25,000, 15 per cent; and on £25,000-£50,000, 10 per cent of the sums advanced. In other words, costs as a proportion of loan fall sharply as the size of loan increases," (Lees, 1971, p52).

The Bolton Committee, in the conclusion to their report, predicted that the financial market might not play a significant role in the future development of small firms:

> "... while there are some differences in the bases on which small firms and large can raise money these are mostly functions of inherent cost and scale differences ... the role of the institutions, however adaptable and sensitive to market needs they are, is necessarily limited; if the small firm sector is to be preserved, institutional finance can never take the place of personal wealth and ploughed-back profits," (Bolton Report, 1971, p348).

This final statement might appear regressive given that this was the situation facing founders of small firms during the industrial revolution of the late 1700s and early 1800s.

2.6 CONCLUSION

It is clear from the aforementioned evidence that small firms and, in particular, small high technology firms have experienced difficulty in raising external finance from institutional sources throughout this century to the time of the Bolton Report. This has been the case despite the attention drawn to the plight of the small firm by major government enquiries on three separate occasions. The common theme of these investigations was that, although small firms were at a financial disadvantage when compared with their larger counterparts, it was not necessarily within the remit of the financial institutions to offer direct preferential assistance to their smaller clients. Indeed, it was postulated that institutional finance might not play a significant part in the formation and growth of small firms. Therefore, the following chapter investigates the sources of investment finance available to the small firm sector following the Bolton Report, and the role various governments in the United Kingdom have played in stimulating investment in the small firm sector.

Chapter 3

INVESTMENT FINANCE AND GOVERNMENT POLICY IN THE UNITED KINGDOM FOLLOWING THE BOLTON REPORT (1971)

3.1 INTRODUCTION

The 1970s was a watershed in government assistance for small companies. Prior to the Bolton Report in 1971, the dominant philosophy was that 'big is beautiful', and that economies of scale could be achieved through a process of re-organisation into larger manufacturing units (Beesley and Wilson, 1981). The small firm sector received government assistance on an ad hoc basis rather than being the target of specific coordinated industrial policies. However, in the 1970s:

> "The economic recession and attendant high level of unemployment ... amongst other things, forced a closure of large manufacturing and production organizations. The British Government therefore ... addressed itself to providing various stimuli to the creation of new businesses particularly in the technological fields where, it is recognized, expansion, growth and employment will be achieved," (Dean, 1982, p101).

This faith in the potential of the small firm sector has not proved unfounded. One of the most widely cited works in relation to

employment in small firms was a study by Birch in the United States in 1979:

> "... which purported to show that, between 1969 and 1976, firms/establishments employing less than 20 people created 66 per cent of all new jobs, half of which were created in independent firms. While Birch's results have been seriously questioned by a number of policy analysts ... they have nevertheless gained considerable acceptance among public policy makers in a number of countries, including the UK," (Rothwell, 1985, p253).

Despite the overestimation of the figures by Birch, it is widely accepted that small firms generate jobs at the same rate, or faster, than larger enterprises (Storey et al., 1987). Dunne and Hughes (1990) conducted a study of census data which illustrated that, between 1963 and 1986, manufacturing firms employing fewer than 100 employees increased their share of employment at a greater rate than companies of a greater size (see Table 3.1).

Table 3.1 Size of firm by share of employment (manufacturing industries - private sector)

	1963	1979	1986
Firms employing 99 employees or less	14.0%	17.2%	24.0%
Firms employing 100-499 employees	15.6%	12.9%	15.9%
Firms employing 500-999 employees	7.7%	6.6%	7.4%
Firms employing 1000 employees or more	62.7%	63.0%	52.8%
Total	100.0%	99.7%	100.1%

Source: Dunne and Hughes (1990)

According to the latest census figures available, firms employing fewer than 100 employees account for almost a quarter of total manufacturing employment and one fifth of national output (Dunne and Hughes, 1990). However, Storey et al. (1987) urge caution in the

interpretation of such figures since "... relatively few small firms ... are both willing and able to create significant numbers of jobs," (p325). The authors go on to argue that government policy should be selective and focus on a few key firms with job creation potential. However, small firms in general, and small high technology firms in particular, contribute towards economic development in other ways by: applying new technologies to produce new products for markets which are initially underdeveloped (Pratten, 1991); providing competition for larger firms (Storey et al., 1987); producing and selling products which involve a considerable service element, including made-to-order goods and speedy delivery (Pratten, 1991); and, supplying inputs to the manufacturing process of larger companies which compete internationally (Storey et al., 1987). As such, there would seem justification for operating a continuing small firms policy in the United Kingdom.

This chapter charts the historical development of small firms policy since 1970, and outlines the response of the private sector to public sector stimuli in relation to small businesses.

3.2 THE PERIOD OF THE CONSERVATIVE GOVERNMENT 1970-1974

3.2.1 The public sector

The period since 1970 includes two changes of government, from Conservative to Labour in 1974, and back to Conservative in 1979. The first Conservative administration concentrated on improving the general environment for the creation and growth of small firms, rather than providing direct discriminatory assistance (Beesley and Wilson,

1982). The Department of Industry established a Small Firms Division in 1971 in accordance with one of the recommendations of the Bolton Committee (Beesley and Wilson, 1981). This government department, which still exists today, is responsible for ensuring that the interests of small firms are taken into account when developing government policy. The department also administers a regional network of Small Firm Information Centres, first established in 1973, which direct entrepreneurs to sources of local advice and aid, and also act as a channel for information on nationally available assistance (Beesley and Wilson, 1981). However, the concentration on indirect government assistance did not have the desired effect of enabling firms to grow according to their own resources as per the recommendations of the Bolton Committee. A survey by the Department of Industry found that public sector financial assistance was a significant factor in the level of overall industrial investment in the United Kingdom (Wilson Report, 1980). The growth in the use of public sector funds was attributed to a number of factors, amongst them the fact that:

> "... private individuals have been running down their direct holdings of company shares and been placing their assets in the hands of the financial institutions. ... since 1973 individuals have tended to increase their savings and have placed them with pension funds, insurance companies, building societies and banks. Companies have then had to borrow these funds back at a time when their own financial outlook was poor - these remarks being, of course, about relative changes rather than about completely new patterns of behaviour. ... by no means all the extra saving has gone to companies - at least not directly. Some of it has gone back to other individuals through building societies, and much of it has been absorbed by the very large increase in the borrowing of the public sector," (Wilson Report, 1980, p13).

3.2.2 The private sector

The combined effect of increased personal savings and reduced direct government assistance meant that new and expanding small firms increasingly turned to the banks for investment funds. During the first six years of the 1970s, seventy nine per cent of total industrial borrowings was derived from bank sources (Thomas, 1978). This exceptional rate was accredited to a sharp decline in the availability of internal finance, and also the difficulty of raising funds on the capital markets because of falling share prices and increasing rates of interest (Thomas, 1978). However, at that time, small firms were not treated in a particularly favourable manner by the banks, according to the preliminary report of the Wilson Committee in 1979. Typically, these institutions offered funds to their smaller business clients at rates of interest which were around two per cent higher than those offered to larger companies. In addition, small businessmen were often asked for a high level of security in return for the finance, and personal guarantees were frequently involved. The financial institutions were cautious regarding the comparative level of loan to share capital they considered acceptable for client firms; that is, the debt to equity ratio. Most often equal proportions of loan and equity finance were required, a 1:1 gearing ratio. This attitude compared unfavourably with that of financial institutions in other European countries, which were prepared to furnish loan finance of up to three times the equity level, a 3:1 ratio (Wilson Report, 1979).

In terms of venture capital provision, the industry changed very little during the 1970s. 3i, in the form of the Industrial and Commercial Finance Corporation, remained the dominant investor in the

shares of small companies in the 1970s (Clark, 1987). This was largely accredited to its well-developed branch network (Lorenz, 1985) and the fact that 3i benefited from its close links with the clearing banks in terms of picking up investment opportunities which the banks were unable to finance. Other players on the venture capital scene at that time included the previously mentioned semi-state bodies and a limited number of merchant and clearing banks (Lorenz, 1985).

3.3 THE PERIOD OF THE LABOUR GOVERNMENT 1974-1979

3.3.1 The public sector

The new Labour government of 1974 recognised that a change of emphasis was required in favour of direct discriminatory measures in relation to small firms. The public sector organisation, the National Enterprise Board (NEB) was established in 1975 by the Labour administration. It was empowered to invest in the equity of high-risk companies which were mainly located in government assisted areas, regions formed to encourage industry to locate or re-locate in areas of high unemployment (Beesley and Wilson, 1981). Government aid and incentives which were not available on a national basis were made available to firms in these regions, for example Regional Development Grants and Regional Selective Assistance (see Subsection 3.5.4). Both the National Enterprise Board and the assisted areas were altered in the early 1980s, and Section 3.5 details theses changes and comments on their effect.

Also, during the Labour administration, two industrial development bodies were established in recognition of the special regional problems in Scotland and Wales. The Scottish Development Agency (SDA) was established in 1975 and the Welsh Development Agency (WDA) in 1976. A discourse on the Scottish Development Agency is warranted since a number of study firms are located in Scotland and, as such, are likely to have had contact with this organisation. The newly formed Scottish Development Agency was charged with the responsibility "... to further economic development, safeguard employment and promote industrial activities throughout Scotland," (Beesley and Wilson, 1981, p275). Along with the Highlands and Islands Development Board (HIDB) founded in 1965, the Scottish Development Agency was concerned with the provision of assistance solely in Scotland. The agency operated a specialist Small Business Division (SBD) which was able to target aid to firms employing 100 people or less and, according to Bienkowski and Allen (1985):

> "Short, medium or long-term loans, convertible loans, share capital in the form of ordinary or preference shares or any combination of these is available to businesses in Scotland. The Scottish Development Agency will consider projects across a broad spectrum but it is particularly interested in new ventures and companies planning expansion, businesses that have short term financial problems but with good prospects of long term return and businesses planning to enter new fields or markets or to develop new products," (p468).

The Scottish Development Agency merged with the Training Agency (Scotland) in 1991 to create Scottish Enterprise. This entirely new body incorporates the objectives of the two former agencies, "... i.e. to promote market-led economic development, growth of enterprise, environmental improvements, job creation, reduced unemployment and enhanced training" (p5), whilst devolving decision-making and

provision of services to local agencies which are better equipped to judge the needs of local clients (Moore, 1990). A number of financial assistance schemes are accessible directly from Scottish Enterprise: development loans are generally available in the range of £5,000 to £50,000 with guarantees required for amounts greater than £10,000; venture funding entails equity participation for a period of 5 to 7 years with no upper financial limit, providing capital is obtained simultaneously from other sources; assistance is available for research and development proposals for European Community funding, and this must be repaid if the application is successful; and businesses located in rural areas may apply for a loan of between £10,000 and £75,000, providing finance from other sources is forthcoming and the loan is secured by the firm (Scottish Enterprise, 1991).

The nearest equivalent body in England to the Small Business Division of the Scottish Development Agency is the Council for Small Industries in Rural Areas (CoSIRA) formed in 1968 in order to fulfil a rural development role. It is by no means as comprehensive in coverage as was the Small Business Division of the Scottish Development Agency, since it is concerned only with firms of fewer than twenty skilled employees in rural areas or towns of fewer than 10,000 inhabitants (Beesley and Wilson, 1981). This organisation provides financial assistance for working capital, equipment and buildings but expects the major share of the project funding to be sourced from the private sector (Beesley and Wilson, 1981). Despite the intentions of this organisation and the Scottish Development Agency to target small firms for assistance, a study by the Wilson Committee in the late 1970s found that they rarely concerned themselves with the problems of new firms (Wilson Report, 1979).

In 1976, the Labour administration also took a hand in promoting private venture capital provision by encouraging the financial institutions to form another venture capital company, Equity Capital for Industry. In its early stages, this firm specialised in the provision of funds to quoted companies (Clark, 1987) rather than being concerned with new and small businesses. Today, this organisation operates as ECI Ventures and prefers to invest in projects involving investments of between £1 million and £5 million (BVCA, 1990a) which generally means that new and small firms are excluded.

The Labour government decided to investigate the financial provision for the small firm sector by commissioning two studies in the latter part of the 1970s. The first, chaired by Lord Lever, led to the conclusion that existing policies for the small business sector were inadequate (Beesley and Wilson, 1981). The second study, chaired by Sir Harold Wilson, made a comprehensive investigation of the economic situation facing small firms in the late 1970s, and the financial provision by the public and private sector for such firms at that time. The information contained in the Wilson Report forms the basis of the next subsection.

3.3.2 The private sector

Businesses experienced high rates of interest on their borrowings in the late 1970s as the government attempted to combat inflation (Lawrence, 1988). Such government anti-inflationary policies were identified as suppressing the level of actual investment activity on two fronts:

> "... the cost of both medium-term loans and overdrafts may rise suddenly ... and that this action will depress demand for the firm's products at the same time. The firm therefore risks finding itself in a nasty squeeze from both sides," (Wilson Report, 1980, p147).

These indirect restrictions on investment mostly affected rapidly growing and innovative companies as the preliminary report of the Wilson Committee argued:

> "Firms expanding relatively fast are the most likely to outgrow retained profits and their proprietors' other resources. Only the more substantial ones then have the option of seeking a public listing. Of the remainder, the larger can seek assistance from the merchant banks or, slightly lower down the scale, the development capital companies. But, apart from the ICFC, these institutions are normally reluctant to consider propositions involving investment of less than £50,000, their preferred minimum more usually being around £100,000. The new organisation Equity Capital for Industry (ECI), set up by the institutions in an attempt to help fill the equity gap, has set its minimum as high as £250,000. This is well above the level where we believe the main problems to exist," (Wilson Report, 1979, p11).

Many companies specialising in the provision of equity finance deliberately avoided start-up investments because of the greater risks involved with associated higher costs (Wilson Report, 1979). Even organisations formed specifically to provide investment capital to innovative small firms appeared to be failing to fulfil their purpose. The National Research and Development Corporation was described as being "... too expensive, too conservative in their attitude to risk and too large and remote from small investors ...," and Technical Development Capital was criticised for making "... less than 10 investments a year," (Wilson Report, 1979, p32). According to the Wilson Committee:

> "There can be little doubt that at the time of this report there are deficiencies in the availability of equity finance for small businesses and that this is putting undesirable constraints on their rate of creation and growth," (Wilson Report, 1979, p9).

This was a major conclusion of the Wilson Committee in its report to the new Conservative government of 1979.

3.4 THE PERIOD OF THE CONSERVATIVE GOVERNMENT 1979-

3.4.1 Public sector initiatives to encourage private sector investment in small firms

The Conservative government initially demonstrated an interest in continuing the more discriminatory form of policy in favour of small firms which had been initiated by the Labour administration (Beesley and Wilson, 1981). A number of direct and indirect policy measures, introduced between 1980 and 1983, were aimed at providing a more encouraging environment for entrepreneurs wishing to establish new companies in all industrial sectors, including the newer technologies. The trend was towards adoption of a business ethos similar to that of the United States, in terms of greater risk and tolerance of failure (Bank of England, 1982). Some of the first policy measures resulted from recommendations made by the Wilson Committee in 1979 and 1980, and these are detailed below.

THE LOAN GUARANTEE SCHEME (LGS)

A preliminary report by the Wilson Committee advised that:

> "A publicly underwritten loan guarantee scheme, with a limited subsidy element and some part of the risk retained by the banks, should be set up on an experimental basis as soon as possible ...," (Wilson Report, 1979, p41).

In 1981, the government introduced the Loan Guarantee Scheme whereby they stood as guarantor to companies which were otherwise unable to raise finance (Batchelor, 1989). Initially, the government accepted 80 per cent of the risk of the investment, with the banks taking responsibility for the remaining 20 per cent. Loans were granted for between two and seven years and could amount to the sum of £75,000.

The investee firms had to pay a premium for this finance, which was normally three per cent of the guaranteed amount of the loan. This figure was additional to the interest charge, which was usually 2-3 per cent above the base rate. The premium was intended to enable the Loan Guarantee Scheme to become self-financing after an experimental period (Greenhow, 1982). Since its inception, the upper limit to the amount of the loan has changed to £100,000 at a premium of 2.5 per cent (DoE, 1989) but a number of other modifications have affected the popularity of the scheme. These will be expanded upon in Subsection 3.5.2.

BUSINESS START-UP SCHEME (BSS) AND BUSINESSS EXPANSION SCHEME (BES)

Another recommendation made by the Wilson Committee, and taken up by the Conservative government was that:

> "Steps should be taken to promote the creation of a new type of institution, the Small Firm Investment Company (SFIC), by the removal of the present fiscal and other constraints on the spontaneous development of such a medium. A specific limited relief of personal taxation should be given for the purchase of SFIC shares ...," (Wilson Report, 1979, p41).

The Business Start-up Scheme (BSS) was the result of this recommendation. It was introduced in 1981, but was quickly replaced by the Business Expansion Scheme (BES) in 1983 (Peters, 1983). These schemes were introduced by the government in order to encourage private individuals to invest in unquoted companies. In return, individuals not only had the opportunity to reap the rewards of a profitable investment, but also to obtain tax relief at their highest rate on the amount invested up to a maximum of £40,000 per annum providing the investment was maintained for a five year period (Woodcock, 1986). According to Rothwell and Zegveld (1985) these

schemes had an impact upon company start-ups in particular. This was due mainly to the fact that the first scheme, the Business Start-up Scheme, was specifically aimed at encouraging investment in new business start-ups and firms of less than five years of age. This was extended after the 1983 budget to allow financiers to invest in older existing companies, and critical comment on this and other revisions is contained in Subsection 3.5.3.

THE UNLISTED SECURITIES MARKET (USM)

Two further recommendations made by the Wilson Committee concern the issue of small firms raising investment capital via a public listing. They read as follows:

> "The Department of Trade, Treasury and other Departments concerned should consider how best to promote the facilities of OTC [Over The Counter or secondary] markets in this country and the case for removing some of the impediments to their development which are alleged to exist at present," (Wilson Report, 1979, p41);

and:

> "The case for changing the law to allow small companies to raise equity in a redeemable form, and other ways of allowing proprietors of small companies to raise outside capital without risking their overall control, should be given further consideration by the Department of Trade, Treasury and other Departments concerned ...," (Wilson Report, 1979, p41).

The Unlisted Securities Market (USM) was formed in 1980 in order to simplify the procedures and reduce the costs for smaller firms wishing to seek a public listing (Wright and Jarret, 1981). According to Woodcock (1986), an Unlisted Securities Market listing has the advantage of "... allowing the owner to realise some of his or her own accumulated wealth and widening the opportunities for a company to

raise finance for its development," (p198). Thus, an organisation is more readily able to sell equity in return for investment funds. A further junior stock market, the Third Market, was formed in 1987 and it has even less stringent requirements prior to listing than the Unlisted Securities Market (ISE, 1988/89). Appendix 1 contains a summary of the comparative levels of entry for the above two financial markets as well as the full market.

In addition, the 1981 Companies Act permitted firms to re-purchase their own shares from shareholders (Lorenz, 1985). Thus, owners/entrepreneurs who were concerned about the ownership and/or control of their firms, would be able to raise finance on the capital market by issuing shares which could be redeemed at a future date. The Act also encouraged the development of management buy-outs, whereby existing managers could buy a company from the parent source, and the promotion of the Business Start-up Scheme (BSS) involving equity investments in small companies (see Chapter 4 for further information).

The Unlisted Securities Market and the Business Start-up and Business Expansion Schemes have been directly linked to the proliferation of the United Kingdom venture capital industry in the 1980s. The creation of the Unlisted Securities Market, and later the Third Market, offered future exit mechanisms to venture capital organisations and individuals prepared to invest in currently illiquid investments (Little, 1977; Lorenz, 1985). According to Clark (1987) the new policy measures implemented by the Conservative administration in the early 1980s were just the sort of stimulus the venture capital industry required:

> "Many British financial institutions, having invested in American venture capital partnerships, naturally began to wonder whether there might not be similar opportunities closer to home. Conversely, certain large US venture capital management firms ... which had come to Britain to raise funds, decided to establish venture capital pools for investment in the UK," (pp75-76).

The aim of the government was to encourage the flow of funds to small firms in recognition of their potential contribution in terms of the regeneration of the economy following the recession. According to Rothwell and Zegveld (1985):

> "Just as governments have begun increasingly to provide special funds to support the R&D activities of existing SMFs [Small Manufacturing Firms], so also have they taken steps to increase the flow of venture capital to stimulate the establishment and growth of NTBFs [New Technology-Based Firms]," (p183).

Further comment on the development of the venture capital industry is reserved until the following chapter, which considers the provision made by the venture capital industry for the financing of small high technology firms during the 1980s.

3.4.2 Other public sector initiatives

Other policy measures were introduced in the 1980s in order to encourage free market entrepreneurship and business development. In addition, siginificant regional policy changes were made during this period.

ENTERPRISE ZONES

The original idea of the first scheme, Enterprise Zones, was "... to create so many Hongkongs - centres of uncontrolled and entrepreneurial capitalism - at various sites around Britain," (Economist, 1981, p54). Companies located in Enterprise Zones were exempt from industrial and

commercial property rates for a period of ten years. In addition, these firms were awarded a 100 per cent allowance on corporation and income tax for capital expenditure on industrial and commercial building (Curran, 1986). Enterprise Zones were located in derelict inner city areas and places of high unemployment (Economist, 1981), and by 1987 there were 25 in operation throughout the United Kingdom. In the same year, the government announced its intention not to create any more Enterprise Zones in England, perhaps because the initiative was costly both financially and in terms of the economic development of regions not participating in the scheme. According to Taylor (1987) the scheme cost the government £300 million between 1981 and 1986 and only succeeded in attracting "... investment into the zones to the detriment of surrounding areas and ... thus only moved problems around," (p6).

ENTERPRISE ALLOWANCE SCHEME

The Enterprise Allowance Scheme involves the payment of £40 per week for a year to people who are out of work and who wish to start up new businesses. The prospective candidates have to invest £1,000 of their own money to qualify for the allowance. The £40 payment is designed to compensate candidates for the loss of unemployment or supplementary benefit (Mason and Harrison, 1986). This scheme has remained relatively unchanged since its inception. Research conducted by the National Audit Office found that the majority of enterprises (57 per cent) started under this scheme are still operating up to three years later (Batchelor, 1989).

ENTERPRISE INITIATIVE

In 1988, the Department of Trade and Industry introduced the Enterprise Initiative scheme whereby qualifying businesses benefit from financial assistance with consultancy fees (Hamilton Fazey, 1988a). Consultancy advice is available under six topic headings; design, marketing, quality management, manufacturing methods, business planning and financial and information systems, to which the government contributes 50 per cent of the cost (66 per cent in assisted areas) of an approved consultant for between 5 and 15 days (Financial Times, 1988). According to the Department of Trade and Industry, demand for assistance under the Enterprise Initiative is strong (Batchelor, 1989). There are indications that the operations of the Enterprise Initiative will be privatised in future (Duffy, 1990). Therefore, it appears that the present Conservative government believes that the private sector is better placed to stimulate industrial growth in the United Kingdom. This is the subject of debate in Section 3.5 of this chapter.

REGIONAL POLICY

Other significant changes to government measures made during the 1980s relate to regional policy initiatives. The United Kingdom government installed its first policies concerning economic development in the regions prior to the Second World War, largely in response to high unemployment in the early 1930s. Since then, according to Townsend (1987):

> "Much of the literature on regional policy arose from the climate of the 1964-70 Labour governments, when the policy was arguably at the heart of a national strategy of thinking. The Conservative governments of 1979 and 1983 did not believe in a strong regional policy, and would have been unlikely to even if there had been more national resources for it. They retained regional policy as a domestic political

> necessity and, on the international scene, as a means of attracting foreign investment and EEC [European Economic Community] grants for 'assisted areas,'" (p237).

These 'assisted areas' in the 1970s consisted of: 'development areas', where the local economy was severly depressed and a large percentage of the workforce was unemployed; 'special development areas', which were located within development areas, and where special incentives were applicable because of the added effects of the demise of coal mining; and 'intermediate areas', which had been disadvantaged as a result of neighbouring development areas (Law, 1980). However, the assisted areas have been reduced in size and number during the 1980s (Townsend, 1987) thereby curtailing the overall number of firms eligible for assistance. Appendix 2 summarises the process of assisted area cutbacks since 1978. In addition, the Conservative government re-defined the grants and assistance available to firms located in the 'assisted areas', and Subsection 3.5.4 details these changes. Meanwhile, the following subsection considers the involvement of the private sector in providing investment capital for small businesses during the 1980s.

3.4.3 The private sector

At the same time as the public sector was attempting to respond to the financial needs of small firms and stimulate venture capital investments, entrepreneurs increasingly were able to obtain investment capital from bank sources in the United Kingdom (Coggan, 1991). This trend was attributed to expanding competition in the financial services sector with overseas competitors, building societies and venture capital funds compelling banks to re-evaluate their lending strategies and customer relations (Financial Times, 1991a). During

the 1980s large corporate customers increasingly turned to overseas lending institutions, personal customers perceived advantages in banking with building societies and, initially, venture capital organisations responded favourably to the financial needs of small firms (see Chapter 4) which were traditionally the domain of the clearing banks. Perhaps the clearing banks perceived that their monopoly on small business lending was under threat, thus explaining the rush to establish and promote small business lending divisions in the early to mid-1980s, despite the fact that small business loans are more expensive per pound borrowed than loans to larger companies. Another motivating factor might have been the publicity associated with successful venture capital investments in the United States (see Chapter 4) which encouraged banks to consider the small business sector as worthy of their interest. In addition to establishing small business lending units, many of the major clearing banks with subsidiary in-house venture capital divisions became more active players on the venture capital scene (Lorenz, 1985).

However, the more liberal lending strategy of the banks in the 1980s has been put to the test during the economic downturn of the early 1990s. It is accepted that companies are more susceptible to failure during a recession; nevertheless, record numbers of small firm liquidations have been reported recently (Waters, 1991). It might be argued that the ready availability of start-up capital enabled the establishment of higher numbers of marginal companies to the extent that the 'natural wastage rate' of small firms has been skewed. However, the countervailing argument is that banks are discriminating against a number of their smaller corporate clients by failing to pass on interest rate cuts (Balls and Lapper, 1991) thereby exacerbating

the liquidation figures. The banks state that the increased margins on the loans to some small firms are a reflection of the risk-reward ratio for these particular investments (Stephens and Lascelles, 1991). Thus, some small firms are still expected to pay a higher loan premium than larger companies, which was the situation facing small firms at the time of the Wilson Committee investigations in the late 1970s. This claim was investigated by the Department of the Treasury which vindicated the banks of uncompetitive practices, but accused them of not giving their smaller clients notice of changes to bank charges (Stephens, 1991). However, the study "... stopped short of fully exonerating the banks of criticisms that they have treated their small business customers badly," (Marsh et al., 1991, p1).

This maltreatment is due to the sea-change in how bank managers view small business loans in the 1990s as opposed to the early 1980s: competition from venture capital organisations in the small business lending sector has not materialised (see Chapter 4); declining first-half profit figures of the clearing banks have been attributed largely to losses on small business lending (Lascelles, 1991); and bank managers are being compelled to manage individual bank branches as profit centres (Martin and Barchard, 1991) with salaries being linked to performance (Batchelor, 1991a). According to Batchelor (1991b) these trends would "... appear to presage a frostier climate for the bank's small-business customers," (p13).

3.5 CRITICAL COMMENT ON PUBLIC SECTOR INVESTMENT CAPITAL PROVISION IN THE 1980s

This section focuses on the many existing schemes and organisations which have been altered by the Conservative administration during the 1980s. The effect of these alterations has been the gradual erosion of benefits to the small firm sector, especially with regard to the provision of public sector risk capital (see Table 3.2).

Table 3.2 Public sector sources of risk finance

Institution/ scheme	Start year	Target recipients	Original remit	Current status
NRDC	1948	All firm sizes	Venture capital, technical & patent info., marketing service	Merged with NEB to form BTG
NEB	1973	All firm sizes	Small firm loans, regional investment, technology investment, management of public companies	Merged with NRDC to form BTG
BTG	1981	All firm sizes	Technology transfer, investment and operations, university-industry linkages	About to become private sector body
LGS	1981	Small firms	Government guaranteed 80% of bank loan at 3% premium, no personal guarantee	Government guarantees 70% of loan at 2.5% premium, personal assets must be commited to commercial loans first
BSS	1981	Unquoted firms of less than 5 years of age	Minimum 5 year investment period	Replaced by BES
BES	1983	Unquoted firms, no age limit	Minimum 5 year investment period, £5m annual limit on amount of fund	£500,000 annual limit on amount of fund (£5m for the private residential property sector)

3.5.1 The British Technology Group (BTG)

One of the major themes of Conservative government policy since it came to power in 1979 has been the transfer in emphasis from assistance under the public sector to increasing reliance on the

operations of the private sector in stimulating industrial growth. Nowhere is this more evident than the reasoning behind the decision to merge the National Enterprise Board with the National Research and Development Corporation to form the British Technology Group in 1981. Although termed a merger:

> "... the Government decided that the role of the NEB should be reduced as far as possible, in the belief that the private sector would be more likely to make a success of NEB-type investments, and that some inefficient companies should be allowed to fail rather than be propped up with taxpayers' money," (Cary, 1987, p357).

The government regards the BTG as a source of private sector finance (Woodcock, 1985) even though it has only recently been put forward as a candidate for privatisation (Fishlock, 1988). Meanwhile, the:

> "British Technology Group is a self-financing public organisation that licenses new scientific and engineering products to industry and provides finance for the development of new technology," (BTG, 1988, p2).

3.5.2 The Loan Guarantee Scheme (LGS)

The modifications to the Loan Guarantee Scheme resulted in two important changes. Firstly, the government now guarantees a smaller percentage of the bank loan obtained by the small firm, 70 per cent as opposed to the original 80 per cent, albeit at a reduced premium of 2.5 per cent (Scottish Enterprise, 1991). Secondly, under the original scheme the entrepreneur was not required to pledge personal assets against a conventional loan before becoming eligible for a guaranteed loan (Woodcock, 1985). According to Lorenz (1985) these changes resulted from the observed high failure rate amongst firms receiving guaranteed loans in the past. However, this high rate of failure may also be attributed partly to the cost of the scheme to small firms. It is not a cheap form of finance, as borrowers are

required to pay a premium to the government over and above the interest payable to the lending bank. Despite a number of notable successes during the lifetime of the scheme, for example the book retailer Waterstone's, it is predicted that the Loan Guarantee Scheme will make only a modest contribution in future to the area of small firm investment finance since demand has fallen in recent years (Batchelor, 1989). This may be due in part to the reduced government role since the scheme started. Presently, the Loan Guarantee Scheme is the subject of a Department of Employment Review (Financial Times, 1991b).

3.5.3 The Business Start-up Scheme (BSS) and Business Expansion Scheme (BES)

Like the Loan Guarantee Scheme, modifications were made to the Business Start-up Scheme within the first few years of operation. According to Armitage (1984) and Dean (1984) the disappointing response to the Business Start-up Scheme by private investors was the reason for its replacement by the Business Expansion Scheme in the 1983 Finance Act. Dean (1984) believed that the 'disappointing response' to the Business Start-up Scheme was due to the incorporation of:

> "... many convoluted and tortuous measures to prevent the abuse and misuse [by the investor] of the [tax] relief that finally nobody understood it, let alone was able to to take advantage of it to any extent," (p49).

In simplifying the legislation and creating the new Business Expansion Scheme version, the applicability of the initiative has been broadened to encompass not only start-up and new businesses of less than five years old (Armitage, 1984), but also <u>all</u> unquoted companies providing

they do not operate in the agriculture or financial services industries (Bienkowski and Allen, 1985). The Business Expansion Scheme has also been revised over the years, and the 1988 budget radically altered the nature of the scheme. The government imposed a limit of £500,000 on the amount a Business Expansion Scheme fund could raise in a year, causing disinterest amongst the sponsors who would normally promote the scheme to its private investors (Fogel, 1988). The exception to this new financial limit is private landlords, who are able to obtain tax relief on the purchase of residential properties of up to a total of £5 million each year, the previous maximum amount allowed under the scheme (Taylor, 1988).

Previously, the Business Start-up Scheme had been restricted to unquoted companies of less than five years of age. As such, it was an appropriate funding mechanism for small firms which experienced difficulties in raising equity finance, as identified by the Macmillan, Radcliffe and Wilson Reports. It might be argued that by eliminating some of the restrictions associated with the Business Start-up Scheme, a greater number of firms overall were able to access assistance. However, it may also be the case that investment in small start-up firms was overshadowed by the perceived benefits of investing in more established companies. The small firm investment role of the Business Expansion Scheme was further diluted by changes made in the 1988 budget. Basically, these alterations meant that investment in the private residential property sector became highly attractive. This led Farmbrough (1988) to comment that the:

> "... BES has become an effective vehicle for government housing policy, but it is questionable whether it is an effective means of raising capital for new businesses in other areas. Indeed, the scheme seems a long way from its original objective

> of providing a source of equity for start-up businesses which might otherwise have found it impossible to raise money ...," (p2).

Many of the Business Start-up Scheme and Business Expansion Scheme funds operated under the management of approved private firms and, since 1987, the number of funds in the United Kingdom has been declining (see Chapter 4). Perhaps this is partly because the funds initially established under the Business Expansion Scheme initiative have performed no better and perhaps even worse than other private sector investment funds, for example unit trusts (Goldstein-Jackson, 1990). It is difficult to tell whether this would have been the case if the original aims behind the Business Start-up Scheme had remained unchanged. Nevertheless, evidence indicates that large capital gains are obtainable from long-term investment in small growth-oriented companies (Larsen and Rogers, 1984).

3.5.4 Regional policy

In 1988, the Conservative administration abandoned the automatic award of Regional Development Grants (RDGs) in favour of Regional Selective Assistance (RSA) for companies located in the 'assisted areas' (Harrison, 1988). Previously, manufacturing firms seeking to create new, or expand existing, production capacity in the aforementioned assisted development areas (see Subsection 3.4.2) were eligible for an automatic Regional Development Grant. This was conditional upon the project creating new jobs in firms employing more than 200 employees, a provision which was waived for smaller companies. The amount of the award could be 15 per cent of the capital expenditure or £3,000 for each new full-time job, whichever proved to be higher. A ceiling of £10,000 for each new job created limited the total amount of the

capital expenditure award; however, this condition was also waived in the case of small firms spending £500,000 or less on the new project (Bienkowski and Allen, 1985). The maximum award for job creation projects was forty per cent of the initial capital investment (DTI, 1984).

Until 1988, Regional Selective Assistance and Regional Development Grants operated concurrently and it was possible for a company to be awarded grants under both schemes (HMSO, 1984). Since then, however, firms can only apply for Regional Selective Assistance which is awarded at the discretion of government bodies. The amount of the award is negotiable, and must be for projects in the assisted areas where there is some perceived regional and national economic benefit, or employment is safeguarded (Bienkowski et al., 1988). According to Oakey (1988): —

> "... it is likely that the abolition of geographically discriminative government incentives will increase the level of government assistance take-up in the South East of England. ... even before the total abolition of regional development assistance, the balance of government aid to industry was changing in favour of the South East of Britain ...," (p11).

The perceived reduction in regional policy expenditure is likely to have an effect the Scottish subsample of firms in this study, however, since the personal interview survey was conducted in 1989 and the policy change occured in 1988, the effect on survey firms will be limited.

3.6 CONCLUSION

The concentration on the implementation of more indirect policy measures, and the reduced effectiveness of existing government schemes and delivery organisations, is likely to have had a detrimental effect on the development of the small firm sector towards the end of the 1980s. The justification for this reduced government role may be the apparent increasing tendency for the private sector to finance the establishment and growth of companies. However, government action to combat inflation in the early 1990s has had a direct effect on the propensity and ability of small businesses to obtain bank finance. Specifically, high interest rates discourage new borrowings, and high default rates discourage the banks from lending to small firms. A recessionary period might be the time for small businesses to consider equity-based investment funds rather than loan capital. The following chapter considers the response of the United Kingdom venture capital industry to the financial needs of small firms, with specific regard to the high technology manufacturing sector.

Chapter 4

VENTURE CAPITAL PROVISION IN THE UNITED KINGDOM IN RELATION TO THE UNITED STATES EXAMPLE

4.1 INTRODUCTION

By the late 1980s, the provision of venture capital funding to small manufacturing firms in general, and small high technology firms in particular, appeared to be in sharp decline. This was the case despite a high technology manufacturing investment orientation by United Kingdom venture capital companies in the early 1980s. The United States venture capital industry, by demonstrating that significant returns could be achieved by investing in the equity of small high technology companies, initially served as an example to venture capital organisations in the United Kingdom. However, the present venture capital focus in the United Kingdom is somewhat different to the traditional investment orientation of the venture capital industry in the United States. Later sections detail these United Kingdom differences, whilst the following section describes the developments in the United States venture capital industry which acted as a 'point of departure' for these later United Kingdom developments.

4.2 INVESTMENT ORIENTATION OF THE UNITED STATES VENTURE CAPITAL INDUSTRY

4.2.1 Origins

The United States venture capital industry is strongly linked, both historically and currently, with high technology industries. Prior to the Second World War, venture capital investments in the United States were primarily the domain of wealthy individuals and families, such as the Rockefellers, Rothschilds and Whitneys (Bullock, 1983). These pioneers were able to take a philanthropic view of their investment strategy, leading Wilson (1986) to comment that, "... venture capital [at that time] was more a rich man's whim than an industry," (p13). The experimentations in venture capital before the Second World War, however, laid the foundations for the institutionalisation of the investment procedure in the late 1940s. One company, in particular, made a significant impression on the venture capital scene under the leadership of General George Doriot. He established the American Research and Development Corporation (ARD) at the Massachusetts Institute of Technology (MIT) in 1946. This institution was designed to "... finance the promotion of advanced technology developed in the major United States universities," (OECD, 1985, p15). Thus, early development of the venture capital industry was linked to the exploitation of new technological developments.

It was to take ten years before the American Research and Development Corporation started to make a profit on its investments, and the following decade saw the corporation invest in its most successful venture, Digital Equipment Corporation. This new enterprise received $70,000 in return for a substantial 78 per cent of its equity in 1957.

Fifteen years later this one investment realised the capital sum of $350 million (Wilson, 1986). It must be stated that such a return was an exception rather than the rule within the American Research and Development Corporation. Nevertheless, it is likely that the Amercian Research and Development Corporation example served to interest other players in the venture capital scene in the 1950s and 1960s. Doriot also provided these new investors with the role model of the "... nurturing father-figure, a patient, helpful counsellor willing to stay ... through good times and bad," (Wilson, 1986, p20).

The proliferation of the new venture capital investment companies in the early 1960s was linked to the enactment of the United States Small Business Investment Act in 1958. This enabled the creation of Small Business Investment Companies (SBICs) which could invest capital, borrowed at preferential rates of interest from the government, in the equity of small firms (Bullock, 1983). Wilson (1986) stated that:

> "... the SBIC program fueled the creation of today's venture capital industry by drawing hundreds of new players into the field of risk investment and by funding some of the most important startups of the 1960s," (p22).

A number of these 'new players' set up as independent investment companies, utilising the resources of both individual and institutional investors (Pratt, 1983a). Large institutional investors, such as pension funds and insurance companies, were now prepared to invest capital with a venture capital firm in anticipation of exceptional returns from a portfolio of new high-risk companies (Pratt, 1983a).

The 1974-1975 recession, however, weakened the newly emerged venture capital industry. Many portfolio companies were beginning to succeed, only to be hit by a slump in the early to mid-1970s which threatened their development. According to Perez (1984) "the majority of venturers virtually abandoned high-risk deals in the mid 1970s for safer leveraged buy-outs and investments in public companies," (p22). However, a number of venture capital organisations were forced to maintain their original investments, some for a longer period than first envisaged, since the market for small company shares had all but disappeared (Pratt, 1983a). This proved to be a fortuitous occurrence, as venture capital providers began to work closely with the management of the portfolio firms during the period of the recession. In this way, the venture capital organisations discovered the 'powerful value-added effect' of their long-term involvement, since many of the investee firms eventually realised significant gains in public offerings (Pratt, 1983b). These exceptional returns did not escape the notice of institutional investors, as Wilson (1986) points out:

> "... the institutions have seen that by selecting and nurturing a portfolio of new companies, a professional venture capitalist can not only live with risks that would discourage most investors but in fact achieve rates of return strikingly higher than other equity investment vehicles. It is equally impressive that few long-term players in professional venture capital have lost money," (p25).

Further stimuli to the development of the United States venture capital industry were changes in the regulations concerning the management of pension funds (Clark, 1987) and a reduction in the rate of capital gains tax in 1978 (Pratt, 1983a). These developments resulted in the industry 'rising like a phoenix from the ashes' after a previously stagnant period during the mid-1970s (Pratt, 1983b). The

impact of government policy on the development of the industry became clear:

> "A major cause of the US venture capital market developing so unevenly appears to have been changes in government policy, and especially in securities regulations and taxation. The increase in capital gains tax between 1969 and 1976 is thought to have been one of the prime reasons why the supply of private venture capital fell over this period: the reductions in capital gains tax in 1978 and again in 1981 are similarly believed to have been an important factor in the recent increase in supply," (Bank of England, 1982, p512).

4.2.2 United States venture capital in the 1980s and beyond

By the early 1980s the industry had become 'healthy and vibrant,' as a consequence of the greater supply of venture capital resulting in greater demand from entrepreneurs and managers (Pratt, 1983a). The industry now consisted of venture capital subsidiaries of banks, other financial institutions and industrial companies, a number of private venture capital companies and Small Business Investment Companies (Bank of England, 1982). These financiers continued to provide a range of classic early-stage and start-up venture capital services, along with later-stage capital, with some investors specialising in the provision of funds by type of industry and/or investment stage (Pratt, 1983a). Despite the large number of players involved, Bullock (1983) maintained that it was "... still an intimate industry with most of the principals ... knowing each other, syndicating deals and helping each other out ...," (p22). Perhaps one of the reasons for this intimacy was that the industry had remained strongly regional in nature. Although a number of venture capital organisations were located in the financial centres of New York, Chicago, San Francisco and Los Angeles, most of the organisations solely dedicated to the provision of venture capital finance could be found in areas of high

technology industrial production, namely Boston and the Silicon Valley area of California. Bullock (1983) identifies one consequence of this regional orientation:

> "As a result of this local bias, the deals financed tend to reflect developments in the local industry rather than vice versa. The industries in which venture capitalists have been most active are computers, computer peripherals, semi-conductors, office equipment, CAD/CAM, some electronic defence equipment, some medical equipment, some energy sources and most recently genetic engineering," (p22).

However, this technological emphasis was to cause problems for the industry in the latter half of the 1980s. Investment capital was flooding into the United States venture capital industry which, in turn, was invested in more and more high technology start-up ventures (Dickson, 1990). Since the rationale for this investment strategy was 'me-too' based, with venture capital organisations simply investing in what were the fashionable sectors at the time, many of these start-ups failed as a result of the generally poor quality of the original investment decision (Clark, 1987). This situation was precipated by falling share prices in quoted small high technology firms in the latter part of 1983 (Clark, 1987) and the later stock market crash of 1987 (Dickson, 1990). Understandably, venture capital organisations and their sources of funds became much more cautious, preferring investments in later stage companies in sectors which were not technology-based (Tait, 1991). The flow of funds to business start-ups started to dry up by the late 1980s (Economist, 1989).

Nevertheless, a number of United States venture capitalists have recognised that the current downturn presents an opportunity to invest in 'quality' new companies in anticipation of achieving higher returns

and, in the process, stimulating a cyclical upswing in business start-up investments similar to that which occurred in the late 1970s (Clark, 1987), (see Subsection 4.2.1). The managing director of the specialist consultancy Venture Economics, Susan Lloyd, observed that technology-based and early-stage investments continued at high levels in the United States in the late 1980s (Batchelor, 1988a). Indeed, one member of the United States venture capital industry predicted "... a bright future for technology-based companies which can compete globally and move new products quickly," (Dunne, 1988, p6). Therefore, entrepreneurs in the United States are still able to access funding for the establishment of new companies. However, this trend may not be entirely due to operations of the United States venture capital industry, but partially the result of private individuals or 'business angels' steadfastly investing equity and expertise in small business ventures (Batchelor, 1988b).

According to Mason et al., (1991) there is a substantial informal venture capital market in the United States providing new and growing businesses with smaller sums of risk capital than the formal venture capital community is prepared to invest. Indeed, research by Gaston and Bell (1988) established that:

> "Private investors or 'business angels' represent the largest source of external equity capital for small businesses in the US .... Private individuals invest at least two to three times the $4bn invested annually by venture capital companies in the US," (Batchelor, 1990a, p17).

Technology-based firms in the United States, whether they require start-up or development capital, are likely to obtain the required finance from business angels (Wetzel, 1983). These investors tend to be ex-entrepreneurs or business managers seeking to invest

money and time in local start-up companies, typically in high technology sectors (Mason et al., 1991). They invest small sums of money, in the form of a minority equity shareholding, for a period of anything up to ten years (Batchelor, 1988b). Business angels are stimulated by the entrepreneurial atmosphere and seek to be actively involved in their investee companies (Mason et al., 1991). In essence, it would appear that the United States 'business angels' of today embody the original venture capital ideal (see Chapter One).

4.3 INVESTMENT ORIENTATION OF THE UNITED KINGDOM VENTURE CAPITAL INDUSTRY

4.3.1 Investment strategy and industry focus

Initially it appeared that a similar relationship between venture capital providers and high technology firms would follow in the United Kingdom. In the early 1980s the venture capital industry responded favourably to the financial needs of small firms, especially small high technology firms. However, the emergence of the United Kingdom venture capital industry was ill-timed to coincide with a period of worldwide decline in certain high technology industries. According to Foster (1986) the bottom fell out of the high technology sector leading a number of venture capital organisations to divest their technological commitments. As a result, Martin (1989) observed that the electronics and other high technology sectors obtained a declining share of overall United Kingdom venture capital investments during the 1980s, although the actual amount received increased. Understandably, a number of United Kingdom venture capital organisations, having had their fingers burnt with uprofitable investments in high technology

companies, started to look for investment opportunities in more commercial industrial sectors.

Table 4.1 illustrates that a wide variety of industries have attracted the attention of venture capital providers throughout the years, particularly those concerned with consumer products and/or services (Clark, 1987). The number of companies in the consumer related sector provided with venture capital funding has gone up from 96 in 1985 to 305 in 1990, and there was a two per cent increase over these six years in terms of overall investments. Pratt (1990) maintained that this investment orientation was to the detriment of high technology manufacturing industries. This is borne out by Table 4.1, where the number of computer related investments has increased from 71 in 1985 to 156 in 1990, but the trend was down from seventeen per cent of all investments in 1985 to thirteen per cent in 1990. Likewise, the number of electronics related investments has increased, but their percentage share was down to five per cent in 1990 from nine per cent in 1985.

Table 4.1 BVCA* investments by industry sector

	1985		1986		1987		1988		1989		1990	
Sector	No.cos.	%	No.cos.	%	No.cos.	%	No.cos.	%	No.cos.	%	No.cos.	%
Consumer Related	96	23	112	25	259	22	305	23	329	25	305	25
Leisure	28		23		41		55		73		39	
Retailing	17		16		52		49		48		56	
Food	11		11		39		51		36		66	
Products	22		32		66		77		100		65	
Services	16		24		53		61		54		77	
Other	2		6		8		12		18		2	
Computer Related	71	17	64	14	117	10	127	10	139	11	156	13
Computers	9		6		12		12		22		15	
Graphics	8		6		9		14		11		8	
Peripherals	8		12		20		21		14		15	
Services	6		6		18		37		19		21	
Software	32		27		45		35		65		95	
Other	8		7		13		8		8		2	
Electronics Related	39	9	35	8	73	6	68	5	81	6	61	5
Components	12		7		20		54		30		31	
Instrumentation	8		9		16		2		9		8	
Other	19		19		37		12		42		22	
Industrial Products	44	10	35	8	125	11	155	12	132	10	130	11
Chemicals	10		8		43		27		48		54	
Automation	10		6		22		36		19		12	
Equipment/Machinery	11		10		38		68		39		37	
Other	13		11		22		24		26		27	
Medical/Biotechnology	16	4	32	7	58	5	52	4	58	5	51	4
Communications	34	8	28	6	53	5	37	3	30	2	20	2
Energy	7	2	3	1	14	1	19	1	16	1	14	1
Transportation	20	5	23	5	53	5	62	5	67	5	90	7
Construction	19	5	9	2	55	5	58	4	82	6	75	6
Financial Services	14	3	24	5	36	3	126	9	25	2	55	5
Other Services	33	8	64	14	190	16	109	8	147	11	91	8
Other Manufacturing	31	7	24	5	141	12	208	16	196	15	173	14
TOTAL	424	101	453	100	1174	101	1326	100	1302	100	1221	100

* This table contains statistics from BVCA members only

Source: BVCA (1985; 1986; 1987a; 1988; 1989; 1990b)

A partial explanation for the declining interest in high technology sectors could be the tendency for financial organisations in the United Kingdom to pursue rapid short-term results (see later). However, according to Rothwell and Zegveld (1985):

> "... the American experience suggests that it takes time to accumulate the knowledge necessary for the operation of a successful venture capital system.

> This means that banks, other financial institutions and governments that have recently entered the venture capital field will need sufficient patience to allow for this knowledge accumulation to occur. It involves the acceptance of high risks in normally risk averse institutions, as well as other fundamental attitudinal and cultural changes. Such changes cannot occur overnight. In the context of reindustrialization, however, they are clearly essential," (Rothwell and Zegveld, 1985, p192).

The question arises as to whether a high technology investment strategy has been abandoned too soon to result in significant returns to United Kingdom venture capital organisations.

4.3.2 Types of investor and source of funds

Table 4.2 demonstrates the development and maturation of the industry during the decade by detailing the number of separate venture capital investments by investor type since 1985, the earliest year for which compatible statistics are available. The presentation of the figures is impaired by the fact that there is no comprehensive database available for the industry. This applies especially to the period prior to 1983, before the British Venture Capital Association (BVCA) was formed (Martin, 1989). The formation of the British Venture Capital Association lent further emphasis to the recognition of the venture capital industry in the United Kingdom. This organisation is responsible for overseeing the standards and ethics of its members, monitoring the development of the industry and representing the views and interests of its members in meetings with professional organisations and government (Lorenz, 1985).

Table 4.2 BVCA* investments by investor type**

	1985		1986		1987		1988		1989		1990	
Investor Type	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
Independent												
- Private	314	37	393	41	544	32	594	31	516	28	520	30
- Public	85	10	136	14	149	9	211	11	126	7	123	7
Captive												
- Bank	151	18	153	16	173	10	207	11	284	15	213	12
- Pension Fund	73	9	43	5	31	2	49	3	35	2	35	2
- Other	61	7	86	9	101	6	46	2	72	4	113	7
3i	-	-	-	-	529	31	591	31	707	38	618	36
BES	126	15	96	10	115	7	78	4	37	2	25	1
Government	33	4	55	6	84	5	123	7	78	4	94	5
Total	843	100	962	100	1726	100	1899	100	1855	100	1741	100

* This table contains statistics from BVCA members only

** Many BVCA members manage more than one investment vehicle. These may be of the same or different types (e.g. a private institutionally-backed fund and a BES fund).

Source: BVCA (1985; 1986; 1987a; 1988; 1989; 1990b)

The different types of investor listed in Table 4.2 include a large number of private independent venture capital funds, and also a number of independent organisations which are publicly listed. The private independent funds are financed by more than one institutional source of capital, and the share markets provide funds for the public independent organisations. On the other hand, captive venture capital funds draw their finances from one parental source, either a bank, pension fund or other financial institution. Many financial organisations have established their own venture capital subsidiaries or divisions in order to extend the financial services they offer. The make-up and source of capital for 3i and Business Expansion Scheme funds have been discussed in the previous chapter. It is via the medium of Business Expansion Scheme funds that individuals in the United Kingdom mainly play a role in the funding of the venture

capital industry. However, a recent report by Mason et al. (1991) indicated that private investors could become increasingly involved in the funding of new, specifically technology-oriented, ventures (see Subsection 4.3.6). Finally, there are a number of organisations which are funded by the government either directly, for example Scottish Enterprise (formerly known as the Scottish Development Agency) or indirectly, for example through local authority initiatives (BVCA, 1989).

Noticeably, there has been a general declining trend in the percentage of Business Expansion Scheme and pension fund investments. Table 4.2 demonstrates that Business Expansion Scheme funds made fifteen per cent, and pension funds nine per cent, of all investments in 1985. This compares with one per cent for Business Expansion Scheme funds and two per cent for pension funds in 1990. Over this same period, the percentage of investments made by the other investors has remained more or less constant (see Table 4.2). In addition, the total number of investments by all venture capital organisations has declined since 1988, although the 1990 figure is still more than twice that of 1985. Perhaps this can be explained by the rush to take advantage of investments in the early 1980s, and subsequent caution until their success could be assessed. Alternatively, returns from early investments which were less than expected might have prompted investors to concentrate less on the venture capital sector. The prevailing economic climate is also a factor, and the 1990/91 recession will have affected both the supply of, and demand for, venture capital finance.

4.3.3 Length of investment

As in the United States, City institutions have been a prominent source of finance for the venture capital community in the United Kingdom. However, these institutions have been criticised for viewing investment on a time-scale different to that of industrialists (Plender, 1990) a problem which has become known as 'short-termism' (Holberton, 1991). It is argued that:

> "... the operation of the UK capital market is inimical to long term planning and investment because the stock market and investors in it are driven by short-term considerations, such as company profits and dividend statements, and their need to perform," (Holberton, 1990, p17).

This has a particular effect on investment in industrial innovation, as the United Kingdom Engineering Council indicated:

> "The City seems to positively discourage investment in innovation. While it likes to see adequate research and development, it does not like it to be at the expense of current profit growth. ... The City thus acts as 'the master' instead of 'the servant' of industry with the emphasis firmly on short-term return," (House of Lords, 1991, p15).

The implication for venture capital investors is that they will tend to seek investments which will produce results over the shorter rather than longer term for their City-based financial backers. This is expanded upon in the following subsection.

4.3.4 Investment strategy and investment stage

The tendency by the United Kingdom venture capital industry to pursue short-term returns is illustrated by the trend in the late 1980s to invest in later-stage investments, particularly management buy-outs, as opposed to start-up and early stage investments. Management buy-outs generally involve the expenditure of larger sums of capital, but

offer a more secure investment over a shorter realisation period. The reason for this is that the three important investment criteria of venture capital organisations, namely management, market and product/service, are more established than with start-up or early-stage companies. Management buy-outs entail existing management teams taking over established companies with developed products and markets. As a result, the perceived investment risk for the venture capital provider is reduced.

The justification for targeting management buy-out investments is that they offer an important source of current income to the venture capital organisation which is waiting for returns to materialise from early-stage investments (Clark, 1987). However, this argument only holds if the venture capital provider maintains a range of investments by different financing stage; that is, some early-stage investments held in the same portfolio as later stage financings. This does not always occur since many funds specialise by investment stage, which has repercussions in terms of this research. Martin (1989) explains:

> "... in value terms the new and small firm sector is by no means the primary focus of venture capital activity. At the same time the growing concentration on management buy-outs raises questions about the meaning and purpose of venture capital, about whether it is moving too far away from what many would regard as its original and key role of backing new small business ventures," (p399).

The emphasis on management buy-outs involving larger sums of capital also means that the investment is more cost effective to the venture capital provider than early-stage investments. The administration costs per investment stay more or less the same regardless of the investment size (interview evidence with a representative of Hambros Advanced Technology Trust).

4.3.5 Investment strategy and location

In terms of location the United Kingdom venture capital industry is similar to that of the United States. Many venture capital organisations cluster around major financial centres, and in the United Kingdom London is notable in this respect:

> "Of the 135 venture capital organizations listed as members of the British Venture Capital Association at the beginning of 1988, some 101 (or 75%) were located or headquartered in London, and a further six were based elsewhere in the South East region ... The main provincial clusters of locally-based venture capital firms that exist are extremely small in comparison, namely Edinburgh (7), Birmingham (6), Cambridge (3), and Glasgow and Cardiff (each with 2). In terms of its organizational structure, then, the industry is overwhelmingly skewed towards the southern half of the country," (Martin, 1989, p393).

In terms of the location of the actual investments themselves:

> "Greater London and the South East remained the dominant sector, accounting for 42% of the companies financed and for 61% of the amount invested. ... Scotland was the only region to show a significant increase in activity levels in terms of the number of companies invested in, rising from 11% in 1989 to 14% in 1990. Total investment ... 7% ...," (BVCA, 1990b, p11).

Martin (1989) has observed that the South East and East Anglia regions not only received a disproportionate share of total investments, but also received a disproportionate share of total technological investments over the years. This is attributed to many new and growing businesses locating in the South East planning region and East Anglia, and these regions being at the forefront of the economic recovery of the United Kingdom during the mid to late 1980s. However, the predominance of venture capital institutions in terms of <u>supply</u> has had an equal, although independent, effect on the regional bias of venture capital investments. Martin (1989) elaborates:

> "... the spatial proximity of, and hence the scope for 'hands on' contact between, venture capital managers and local client projects is of key importance: all other things being equal, risk aversion is likely to be an increasing function of the locational separation between the venture capitalist and the investees seeking venture finance. Because of the concentration of venture capital organizations in the London area, this factor may well have served to impart regional bias in venture investment in favour of the surrounding parts of southern Britain which, being within convenient travel distance and thus easy to monitor, are viewed as rich in investment opportunities and 'low risk,'" (p398).

This indicates that venture capital providers in the United Kingdom set a high priority on the need for 'hands on' contact, allowing them to 'nurture' and 'add value' to their investments by actively working with investee companies. However, venture capital organisations in the United Kingdom have tended to take a more 'responsive' investment stance, waiting for the investee company to request assistance beyond the provision of investment capital. Taylor (1983) sums up the difference between the United Kingdom and the United States venture capital industries in this respect:

> "... the 'responsive' investor has actually dominated the scene [in the UK] since the 1940s in the shape of ICFC. We therefore have had an implicit definition of venture capital as being <u>risk</u> money and <u>responsive</u> support, whereas in the US it has been <u>equity</u> finance and <u>active</u> support," (p27).

A 'responsive' investment stance might be more manageable when not investing in inexperienced companies attempting to take new products to new markets; that is, United Kingdom venture capital organisations can afford to take a more hands-off investment role with later-stage investments in companies with established trading records.

4.3.6 Private investors or 'business angels' in the United Kingdom

Evidence on business angel activity in the United Kingdom is primarily limited to a study by Colin Mason, Richard Harrison and Jennifer Chaloner of the University of Southampton and the Univerity of Ulster at Jordanstown (Mason et al., 1991). According to the researchers:

> "... informal investors are playing an important role in the financing of small businesses in the UK. First, by making investments typically of under £50,000, ..., a significant proportion of which is in new and recently established businesses, informal investors are contributing to the filling of the equity gap. Second, entrepreneurs would seem more likely to be able to raise finance from informal investors than from venture capital funds. ... informal investors have a lower rejection rate, are more patient investors, and have lower rates of return targets," (Mason et al., 1991, p34).

Like their counterparts in the United States, many business angels in the United Kingdom are stimulated by the entrepreneurial process. Typically, these informal investors are successful entrepreneurs and/or businessmen who seek to invest small amounts of capital in local ventures for two main purposes: one to obtain significant financial gains from a successful investment, and two to be actively involved in the management and development of investee firms (Mason et al., 1991). However, in an earlier study, Harrison and Mason (1991) hypothesised that United Kingdom business angels possessed certain different characteristics and attitudes to business angels in the United States. This was confirmed by their recent research (Mason et al., 1991) which found that informal investors in the United Kingdom invest considerably less per firm, are less patient, and have expectations of higher rates of return and capital gains than their counterparts in the United States. In addition, more informal investors in the United Kingdom than in the United States claimed that their investment portfolios were performing below expectation (Mason

et al., 1991). This is likely to be a result of their flawed 'invest less for less time and gain more' strategy. One final important difference is that United Kingdom business angels expect to sell their equity shareholding to someone outside the investee company, whereas business angels in the United States mostly sell the shareholding back to the investee firm (Mason et al., 1991). This tendency could deter entrepreneurs wishing to maintain control of their ventures from accepting finance from United Kingdom business angels.

4.4 A COMPARISON OF THE UNITED KINGDOM AND UNITED STATES VENTURE CAPITAL INDUSTRIES

4.4.1 Industry structure

Many venture capital organisations in the United States are partnerships, whereby a small number of people with entrepreneurial or business experience independently raise investment funds from larger financial institutions (Clark, 1987). In contrast, many venture capital operations in the United Kingdom are affiliated to larger financial institutions, although they may have a certain amount of decision-making independence, and the proportion of people with entrepreneurial or industrial experience is much less in evidence (Clark, 1987). Overall, the venture capital industry in the United Kingdom appears to have adopted a more bureaucratic structure to that of the United States (see also Subsection 4.4.2). This is almost certainly a result of the later development of the United Kingdom venture capital industry, as the following illustrates.

Figure 4.2 highlights some major developmental stages in the growth of both the United Kingdom and United States venture capital industries, and demonstrates that a number of parallels can be drawn between the two countries. Both the 1958 Small Business Investment Act in the United States and the 1981 Companies Act in the United Kingdom (see Chapter 3) resulted in government initiated small business investment vehicles; that is, Small Business Investment Companies in the United States and the Business Start-up Scheme and Business Expansion Scheme in the United Kingdom. These initiatives encouraged venture capital funding on a large scale in the 1960s in the United States and the 1980s in the United Kingdom. The proliferation of venture capital organisations in the United Kingdom in the early 1980s coincided with a time when venture capital investments, a long-established informal feature of the United States financial system, became more formalised and recognised as an industry (Orsenigo, 1989). This was largely a result of the emerging involvement of large institutional investors in the venture capital investment process in the United States (Wilson, 1986). Such large institutional investors in the United Kingdom have been involved in venture capital funding from the beginning of the formalised industry in the early 1980s, and as far back as the 1940s when the banks formed the Industrial and Commercial Finance Corporation (see Chapter 2).

Figure 4.1 Development of the United States and United Kingdom venture capital industries

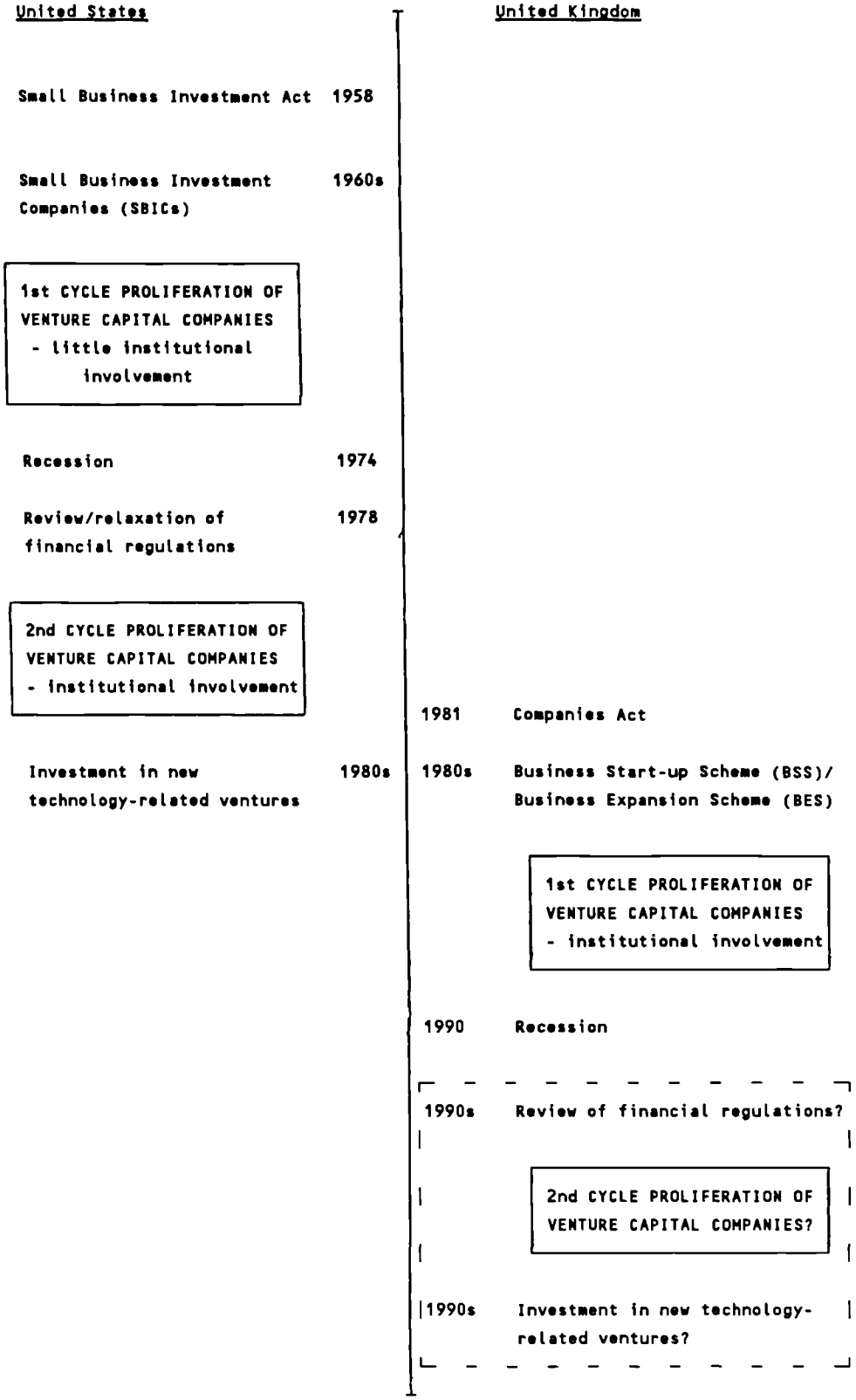


Figure 4.1 illustrates that the United Kingdom venture capital industry has generally mirrored the development of the United States venture capital industry with a decreasing time lag. Therefore, there has been a degree of convergence in the two industries. This will be investigated in in the following subsection in terms of the relative investment strategies pursued by the two venture capital industries. In terms of industry structure, however, it might be postulated from Figure 4.1 that the 1990s could see the United Kingdom government review some of its financial regulations as it emerges from the recession and, in turn, this could lead to a second upsurge in venture capital activity (hence the question marks in Figure 4.1). In addition, a governmental reappraisal of technology-related initiatives may stimulate private sector investment in the new technologies. If this stimulus is not forthcoming, the question arises as to whether the government should be prepared to take responsibility for directly financing the development of important new technology-based industries. The conclusion to this thesis will discuss the role the government might play in terms of the provision of venture capital type funding.

4.4.2 Investment strategy

Prior to the late 1980s, a number of differences were observed in the modi operandi of the United States and United Kingdom venture capital industries (see Table 4.3). Traditional venture capitalists in the United States (Perez, 1984) primarily invested in new ventures with a high technology content (Pratt, 1983c; Orsenigo, 1989) thus becoming "... brokers of risk, ..." (Wilson, 1986, p5). They sought to reduce this risk by actively participating in the management of their investee companies, bringing considerable experience in the form of

previous similar investments and/or their own business ventures and established commercial contacts, thus, adding value to the investment (Timmons, 1983; Amit et al., 1990). Management participation was facilitated by the fact that venture capitalists often obtained majority shareholdings, giving them the opportunity to exercise control if required (Bullock, 1983; Wilson, 1986; Clark, 1987). Venture capitalists did not seek to maximise their short-term returns, instead they invested in the form of equity and realised their investments after a number of years when the investee company was publicly listed or sold to another company (Wilson, 1986). The spectacular investment successes of Digital Equipment Corporation, Scientific Data Systems, Apple Computer, Compaq, Lotus and Genentech in the United States (Hambrecht, 1984; Wilson, 1986; Economist, 1989; Lancaster, 1991) encouraged other countries to develop venture capital-type investments.

Table 4.3 Comparison of the Investment Strategies of the United States and United Kingdom Venture Capital Industries Prior to the Late 1980s

	United States	United Kingdom
Proportion of high technology investments	HIGH	LOW
Proportion of equity acquired	HIGH	LOW
Level of risk	HIGH	LOW
Degree of 'hands-on' involvement	HIGH	LOW
Length of involvement	HIGH	LOW
Bureaucratic structure	LOW	HIGH

However, Rothwell observed in 1985 that "the UK ... is at a relatively early - and some would say confused - stage in adopting the techniques and style of American venture capitalists," (p262). This 'confusion' translated into a very different investment strategy amongst United Kingdom venture capital organisations. The United Kingdom venture capital industry tends to focus less on high technology investments and more on the consumer product and/or service industries and, at the same time, more established companies receive the major share of venture capital funds in the form of management buy-out and other later-stage investment capital (BVCA, 1985; 1986; 1987a; 1988; 1989; 1990b). Venture capital organisations rarely take a controlling equity stake in the investee company except, perhaps, where a number of financiers invest a large amount of funds in one company as a syndicate (Lorenz, 1985). As a result, it is rare for the venture capital organisation to become actively involved in the management of the investee company (Dodgson and Rothwell, 1989) although many appoint, or reserve the right to appoint, directors to the board of management of the investee company (Lorenz, 1985). This investment strategy by the United Kingdom venture capital industry has a threefold effect; the level of risk of the investment is reduced, the time until the realisation of the investment is reduced and the need for hands-on contact is reduced. This reduced involvement with investee companies means that United Kingdom venture capital organisations are able to operate in a more standardised and, hence, bureaucratic manner. Perhaps this investment orientation results from the fact that a number of major players on the venture capital scene were drawn from accountancy backgrounds and did not have industrial experience (Clark, 1987). This has a twofold effect on venture capital operations. First, venture capital personnel are more

qualified to assess the existing quantitative assets rather than the technical potential of prospective investments. Second, they are more able to assist with the financial, rather than management, operations of investee companies.

Clark (1987) predicted that the reorganisation of the United States venture capital industry in the 1980s, specifically the establishment of venture capital subsidiaries by large financial institutions, might lead to 'bureaucratic inertia' in future. Although venture capital organisations in the United States are not 'inert' currently, they do appear to be tending towards a bureaucratic structure similar to that of United Kingdom venture capital providers. In particular, the investment orientations of the two industries are converging on later-stage investments to the detriment of business start-ups (Durr, 1991) which is the result of institutional pressure on venture capital investors to show early, albeit potentially lower, returns (Economist, 1989; Tait, 1991). That is not to say that the operations of the two venture capital industries are unacceptable. However, it is important that the United Kingdom government recognises two factors: the United Kingdom venture capital industry is not responding favourably to the financial needs of high risk technology-based ventures; and informal investors in the United Kingdom do not appear to be filling this funding gap as readily as United States business angels.

4.5 CONCLUSION

The trend in the early 1980s towards less automatic, more indirect forms of government assistance resulted in an environment conducive to the emergence of the United Kingdom venture capital industry. However, it is clear that, no matter how encouraging the environment, the private sector will always tend to neglect certain areas of business which are not attractive in the short term but which, nonetheless, may be important in terms of the future economic development of the United Kingdom. In such circumstances, it might be politic for the government to take a more active role in the promotion of initially unattractive areas of business.

The purpose of this research, therefore, is to investigate the relationship which exists currently between the venture capital industry and small high technology firms in the United Kingdom in order to recommend appropriate government action. The investigation can be made more relevant by taking a regional perspective and attempting to evaluate whether, with the removal of direct government assistance in the regions, the poorly developed venture capital market outside of the South East area has any effect on the growth of small high technology manufacturing firms in the regions. This study samples small firms from the electronics sector in the core area of the South East of England and the more peripheral region of Scotland, in order to attempt a critique on the effectiveness of the private sector provision of venture capital funds to such companies. Chapter 5 outlines the methodology used in generating the data for this research, and Chapters 6 through to 10 analyse the results.

Chapter 5

RESEARCH DESIGN AND METHODOLOGY

5.1 RESEARCH DESIGN

In order to set the design of this research in context, the following subsection initially highlights the major hypotheses to be tested in subsequent chapters.

5.1.1 Research questions

This study proposes to investigate the relationship between producers of venture capital finance, venture capital organisations, and important consumers of these funds, small high technology manufacturing firms. A comprehensive review of relevant literature resulted in the following hypotheses.

> Firms do not tend to approach the most suitable financial organisation or choose the most appropriate financial instrument for their needs.

Ideally, the entrepreneur should have a clear understanding of the precise nature of his financial requirements when seeking additional external capital (Williams, 1987). For example, it should be established whether the finance is required to supplement working capital, 'shore-up' the firm in times of trouble, support growth, fund specific projects, or is for some other objective. This should help the entrepreneur determine what type of finance is required and identify the most appropriate financiers.

> The growth of small high technology manufacturing firms in the United Kingdom is, inter alia, improved by the adoption of venture capital finance.

High technology entrepreneurs requiring start-up and development capital may decide that venture capital funding is appropriate, especially given the evidence of the relationship between venture capitalists and high technology firms in the United States. The presence of, and ease of access to, venture capital funding in a prevailing entrepreneurial climate in the United States has resulted in the creation and proliferation of new businesses in emerging technological industries (Pratt, 1982).

> Firms located in the South East of England are at an advantage when compared with similar firms located elsewhere because of the concentration of both venture capital organisations and investment deals in this region.

> Venture capital institutions located in the South East of England are not responding to the latent demand for venture capital finance by companies in more peripheral regions, for example Scotland.

The fact that the majority of United Kingdom venture capital providers are not only based in London, but also invest a disproportionate amount of funds in the Greater London and South East of England areas (Mason, 1987) might mean that firms located in more peripheral areas are disadvantaged. Firms based in the South East have access to a greater availability of venture capital funds, reputedly involving better financial terms and access to extensive local contact networks in comparison to other financial organisations.

> Venture capital funding is 'crowding out' other sources of finance by providing similar financial services and imposing similar conditions in order to reduce the risk of the investment.

It is alleged that "venture capital is hardly venturesome ... [since] ... funds behave more like banks," (Batchelor, 1987, p20). Criticisms have been levelled at venture capital organisations in the United Kingdom for duplicating existing financial services in the pursuit of rapid, risk free returns (Batchelor, 1990b). In addition, management buy-outs involving large sums of capital gained popularity in the United Kingdom to the detriment of early-stage investments (Batchelor, 1988a) leading to the supposition that the 'equity gap' is still a problem affecting the growth of small high technology firms.

> The ability to obtain venture capital funding depends upon the nature of the initial contact between the investor and investee and/or the quality of the business plan in terms of management, market and product criteria.

The preferred course of action for a company applying for venture capital funds, according to venture capital organisations, is a personal introduction to the potential investor by a third party rather than an unsolicited call (Pratt, 1983c). Venture capital providers have encouraged entrepreneurs to establish contact through familiar intermediaries like accountants, bankers or lawyers (Clark, 1987). Thus, venture capital organisations can evaluate investment opportunities in relation to the judgement of the intermediaries, who might have forwarded 'good' or 'bad' investments in the past. Once contact has been established, the decision to pursue the investment opportunity is largely determined by the quality of the business plan (Timmons, 1981). Typically, the investigation consists of "... an independent study of the technical features of ... [the] product, verification of the marketing information, and a reference check on key personnel," (Deloitte Haskins & Sells, 1983, p57).

> The propensity to apply for venture capital funds depends upon the ethos of the founding entrepreneur in terms of the ownership and control of the company.

The provision of traditional venture capital funding often involves the transference of a sometimes substantial shareholding which results in some loss of control for the original owner (Forrest, 1987). If the entrepreneur puts a high value on the ownership of the company, then he may not be willing to to apply for venture capital funds because of the need to concede equity. To investigate the effect of the ethos of the founder on the propensity to apply for venture capital funding, firms which have not applied for venture capital are included in the sample along with companies which have obtained this finance. A third category of survey firm is included in the study to account for the situation where firms applied for venture capital finance but did not receive it, because either the company was refused the money, or the entrepreneur decided not to accept the venture capital offer.

The research questions set out above will be expanded upon and investigated in greater detail in the individual empirical chapters later in this thesis.

5.2 MAIN RESEARCH METHODS

5.2.1 Qualitative versus quantitative research methods

There is much debate over whether qualitative or quantitative research techniques are more effective for gathering information on fluid and complex business organisations. It is argued that quantitative research allows the measurement of certain organisational characteristics, whilst a qualitative methodology attaches meanings to events (Daft, 1983). Nevertheless, both quantitative and qualitative

methods have their failings. The main emphasis of qualitative research is on the interpretations of the subjects under study, and this entails the collection of rich and detailed unstructured information over time. Such information comes under criticism for being anecdotal and difficult to analyse and generalise to other situations (Bryman, 1989). On the other hand, quantitative or sample survey research often involves the collection of structured data based on pre-determined questions. This does not necessarily allow the respondent to convey, or the researcher to learn of, underlying events (Bryman, 1989). The way the questionnaire is constructed, or the manner in which the questions are asked, may also affect the response of interviewees to the extent that they provide 'socially desirable' answers (Marsh, 1984). However, according to Crompton and Jones (1988):

> "... organizational research ... is not a mutually exclusive decision between quantitative and qualitative methodology. In reality it is very difficult to study organizations without using both sorts of methods. In any event quantitative data always rests on qualitative distinctions. ... the issue turns on the appropriateness of methods, not with taking sides in the debate between qualitative and quantitative methodologies," (p72-73).

5.2.2 The personal interview survey

The chosen method of research for this study was the personal interview survey, in the opinion of Kerlinger (1986) "... the most powerful and useful tool of social scientific survey research," (p379). The interview instrument could take a number of forms; from being highly structured through to being totally unstructured. The questions and their sequence could be in a fixed order, ensuring that any variations between responses were attributed to the differences between respondents. However, such a structured interview format

assumes that respondents have a common vocabulary and that they will all interpret the questions in the same way (Nachmias & Nachmias, 1982). On the other hand, an unstructured interview could be employed with the focus on the subjective experiences of the respondents. This would allow repondents considerable scope to describe how easy or how difficult it was to find investment capital (Nachmias & Nachmias, 1982). Acknowledging that both variations had their advantages, the interview schedule of this research contained a combination of structured and unstructured questions in order to combine quantitative and qualititative information. Therefore, both factual data and the views and opinions of the interviewees could be collected, neither of which on their own would have fully addressed the research questions.

However, there are problems associated with personal interview survey methods. First, if a postal questionnaire survey is conducted prior to the main interview the subjects might be over-sensitive to the aims of the research, a problem termed premeasurement. Second, selection errors may be encountered if the selected groups are initially unequal in terms of propensity to apply for venture capital funding. Third, measurement and timing errors arise when the research is undertaken at an inappropriate time to reveal the effect of the dependent variable (Aaker & Day, 1983). For example, a firm may have received venture capital finance recently, and its full effect on the organisation might not be felt for some time. It is believed that awareness of such problems has helped to eliminate or limit their effects when conducting this research and interpreting its results. The personal interview questionnaire was piloted with three firms based in the

South West region of England in order to identify any possible difficulties. A number of minor modifications were made as a result, and the final version of the questionnaire is contained in Appendix 3.

5.2.3 Contextual interviews with venture capital organisations

In order to supplement the information provided by the small high technology manufacturing firms in this survey, information of a more qualitative nature was sought from those organisations supplying venture capital finance. Initially, the different types of venture capital providers were identified, for example bank subsidiaries, independent venture capital firms or semi-State bodies. These organisations were stratified according to location and whether they had a high technology focus to their investment strategy, and nine were then selected to take part in an unstructured interview survey. Appendix 4 details the general questions discussed during the interviews. The selection process was structured in order to include 3i and the Scottish Enterprise (formerly the Scottish Development Agency), which are prominent players in the venture capital marketplace. The remaining interviewees comprised a cross-section of types of venture capital firm, including merchant bank subsidiaries and independent organisations, in the two survey regions. Thus, it was possible to form a picture of the delivery of venture capital by these organisations, the conditions they offered and their attitudes to the small high technology manufacturing sector.

The contextual information obtained from the venture capital organisations provides a useful balance to the experiences and views of the small high technology firms. These interviews also proved extremely helpful in identifying current trends in the venture capital

industry. This information is incorporated into the thesis largely in the form of anecdotal evidence, in order to oppose or lend support to particular arguments derived from the literature review and the small firms survey.

5.3 RESEARCH SAMPLE

5.3.1 Selection of the study firms - population

Kelly (1987) indicated that firms located in the South East of England had access to better financial advice than firms in other regions. This observation was based on regional variations in the take up of external funds, as evinced by the majority of Unlisted Securities Market (USM) listed companies located in the South East of England. This has significant implications for the development of firms in the regions, especially when:

> "... new firm formation would appear to be further intensifying existing patterns of concentration of the electronics industry in the expanded South Eastern core at the expense of intermediate and peripheral areas," (Kelly, 1987, p133).

Taking these two observations together, it would appear that external financial sources in the South East of England are involved in funding new and existing firms in the high technology electronics industry. However, of the areas outside of the South East of England, Scotland is particularly noticeable for its strong financial community (Hood and Young, 1984) and also its contribution to employment in the electronics industry (Young and Stewart, 1986). Thus, Scotland was selected as a comparison region for the South East of England, since the electronics industry and financial sector are strongly represented

in both communities. A number of other studies have sampled companies in Scotland and the South East of England when undertaking similar comparative research (Oakey, 1984a; Breheny and McQuaid, 1985; Kelly, 1987; Oakey et al., 1988). The study regions were chosen in order to test for the hypothesised financial advantage of local venture capital funding for firms located in the South Eastern 'core' region, when compared with a sample of firms from the 'peripheral' region of Scotland.

5.3.2 Defining the study firms

SMALL FIRMS

In any research concerning small high technology manufacturing firms a necessary prerequisite is the definition of a 'small firm' and, within that classification, a 'high technology small firm'. One of the first studies to single out the small firm for investigative attention was the Bolton Report in 1971, which also attempted a qualitative definition for such firms:

> "Firstly, in economic terms, a small firm is one that has a relatively small share of its market. Secondly, an essential characteristic of a small firm is that it is managed by its owners or part-owners in a personalised way, and not through the medium of a formalised management structure. Thirdly, it is also independent in the sense that it does not form part of a larger enterprise and that the owner-managers should be free from outside control in taking their principal decisions," (Bolton Report, 1971, p1).

The Bolton Committee had problems in converting this definition into a more quantitative guide for use by researchers. Table 5.1 shows that numerical definitions were eventually adopted and these were based on the number of employees or turnover. These definitions were updated by a later government study, the Wilson Report in 1979, which adjusted the turnover definitions to take account of inflation (also shown in

Table 5.1). These definitions, however, do not facilitate comparisons across the different economic sectors (Curran, 1986). The Bolton Inquiry acknowledged that the definitions were inadequate, and maintained that a universal quantitative definition of small firms was impossible to achieve because of substantial variations in the number of employees, assets and turnover between industries (Curran & Stanworth, 1982).

Table 5.1 Definitions of small firms in specific industries

INDUSTRY	DEFINITION (according to the Bolton Report, 1971)	REVISED DEFINITION * (according to the Wilson Report, 1979)
Manufacturing	200 employees or less	Stays the same
Retailing	Turnover £50,000 or less p.a.	£185,000 p.a. turnover
Wholesale Trades	Turnover £200,000 or less p.a.	£730,000 p.a. turnover
Construction	25 employees or less	Stays the same
Mining/Quarrying	25 employees or less	Stays the same
Motor Trades	Turnover £100,000 or less p.a.	£365,000 p.a. turnover
Miscellaneous Services	Turnover £50,000 or less p.a.	£185,000 p.a. turnover
Road Transport	5 vehicles or less	Stays the same
Catering	All excluding multiples and brewery managed pubs	Stays the same

* Wilson Report, 1979, adjusted the turnover definitions to take inflation into account (1978 prices).

Source: Bolton Report, 1971 and Wilson Report, 1979

Many researchers consider the above small manufacturing firm definition to be unrealistic and inapplicable for research purposes, since the upper limit of 200 employees is far too high (Curran, 1986). Stanworth and Curran (1981) point out that, "... many of the

significant social characteristics of the small firm become severely attenuated well before the number of participants reaches 200," (p153). Nevertheless, many researchers have used the Bolton definition of small firms of '200 employees' as the benchmark for their own studies involving manufacturing firms. Oakey (1984a) surveyed independent small high technology manufacturing firms employing fewer than 200 employees. Tamari (1981) collected data on small manufacturing firms employing less than 200 workers in the United Kingdom, France, Israel and Japan, but encountered a problem in the United States where a classification of 'less than five million dollar assets' had to be adopted. This illustrates that studies across different industrial sectors and surveys involving the same industry in different countries are hindered by incompatible definitions of small firms. A number of researchers, when considering the problem of definition, have arrived at their own description of a small firm. For example, Hertz (1982) maintained that "a small business is a business that is managed by not more than 3 managers, or whose workforce does not exceed 100 persons," (p433). This corresponds with the view of Curran (1986) that many investigators have adopted a definition involving '100 or less' employees, and an even lower number on occasion; for example, Binks (1980) studied small firms employing less than thirty people.

It would appear from the above discussion that a commonly agreed definition of a 'small firm' is difficult to achieve. Therefore, after an extensive literature review, this researcher decided to use the Bolton classification of the small manufacturing firm, comprising 200 employees or less.

HIGH TECHNOLOGY FIRMS

Similar problems have been encountered when searching for a universal definition of 'high technology' firms, leading researchers to attempt their own descriptions. A number of reasons have been put forward to justify the need for a high technology definition: first, the term 'high technology' has been applied to many spurious products by the media; second, it is important to recognise and measure the growth sectors in industry for economic development purposes; third, high technology firms should be identifiable for government planning and assistance purposes; and finally, as was argued with small firms, investigators require a definition standard for comparative research (Oakey et al., 1988).

Three types of 'high technology' definition have been identified in the available literature: occupational classifications relating to the level of Research and Development (R&D) employment (Glasmeier et al., 1983); counts of the number of innovations or the number of patents per sector (Pavitt, 1982); and the rate of growth of the firm in output and/or employment terms (Weiss, 1983).

The occupational definition of high technology industry is an input measure, and indicates the ratio of engineers, scientists, technologists and others to remaining workers in the firm or industry (Breheny & McQuaid, 1987). However, this has led to some spurious high technology categories, for example soap being linked with the electronics and aerospace industries (Oakey et al., 1988). The level of R & D expenditure is another input measure, but there is a tendency for this to be underestimated in the small firm (Oakey et al., 1988).

This is due to the informal nature of research and development activity in the small firm where much work may be undertaken outside working hours.

It has been suggested that output measures are a more direct measure of the contribution of a firm to the economy than input measures (Oakey et al., 1988) and perhaps this may be a more appropriate way to define high technology industry. Attempts have been made to record the number of innovations or the number of registered patents as indicators of the level of technology. However, Oakey et al. (1988) pointed out that many registered patents and innovations do not necessarily contribute to the success of the firm, and such a definition may overestimate the worth of the firm. The final definition, rate of growth in terms of output or employment in the company, is evaluated by Kelly (1986). Over the period 1975 to 1983 when output across a range of industries was declining, certain sectors continued to grow in terms of both output and employment, and the computer industry was cited as one. However, some industries which might instinctively be termed 'high technology,' such as electronics or information technology, experienced a period of decline when other non-technological sectors prospered. These definitional problems confirm the observation of Oakey et al. (1988) that, "... there is no direct measure of the degree to which industries are 'high technology ...,'" (p41).

5.3.3 Choice of study industry and regions

Study firms considered to be high technology were sampled from the Radio, Radar and Electronic Capital Goods industry, Minimum List Heading (MLH) 367 (HMSO, 1979). Breheny and McQuaid (1985) identified MLH 367 as a high technology industrial classification but later expressed doubts about the extent to which firms in this category could be termed 'high technology' (Breheny and McQuaid, 1987). However, it is not the remit of this research to define what constitutes a high technology firm and, as Oakey et al. (1988) point out, "... the key parameters designed by ... analysts as delimiters of a high-technology industry" and, for that matter, small firms "... are based on hypotheses of the researchers," (p38). Therefore, the study firms were selected on the basis of having a high technological content to their products and, along with employing 200 people or less, the companies were also required to have been established independently, although their current status was immaterial. The reason for this latter criterion was that companies initially formed as independent enterprises would not have a parental source of income to cushion the start-up/early growth stage of development. Firms established as subsidiaries would not have the same relevance to a study of venture capital needs as those formed independently.

Being aware of the possible failings of MLH 367 listed firms to meet the 'high technology' requirement, it was decided to update the industrial classification and reconcile it with the more recent revised Standard Industrial Classification (CSO, 1980). Appendix 5 illustrates which of the Activity Headings under the more recent classification correspond with the old MLH categorisation. In summary, the study industry comprises firms belonging to Class 34,

electrical and electronic engineering, and Class 37, instrument engineering. Within these classifications the following Activity Headings were selected: 3433, alarms and signalling equipment; 3435, electrical equipment for industrial use not elsewhere specified; 3443, radio and electronic capital goods; 3454/2, other electronic equipment not elsewhere specified; 3710, measuring, checking and precision instruments and apparatus; and 3732, optical precision instruments (HMSO 1986a; 1986b; 1986c; 1986d; 1986e).

Breheny and McQuaid (1985) established that high technology firms classified under MLH 367, according to the 1968 Standard Industrial Classification, were well represented in the two target research areas of Scotland and the South East of England. Therefore, it was decided to include in the sample all the relevant firms in Scotland, and to concentrate on the firms located in the English counties north of London which bordered approximately on the 'M11 corridor,' that is Cambridgeshire, Hertfordshire and Bedfordshire. This English sub-region was chosen partly because of the recent research interest generated by what has become known as the 'Cambridge Phenomenon.' Segal Quince and Partners (1985) identified that national, regional and technological factors combined to create a seed-bed environment for new technology-based firms in Cambridge and, accordingly, high technology electronics companies have thrived in this setting.

The next task involved identifying directory sources of firms belonging to these industrial classifications and located in the two study regions. A number of directories were consulted in order to determine the best sources of information on the selected study industry. In addition to this, information was sought from county

councils for the three South Eastern counties and the Scottish Development Agency (SDA) for the whole of Scotland. The latter sources proved most helpful in providing accurate up-to-date information on the particular sectors of high technology industry of interest to this research. Cambridgeshire and Bedfordshire County Councils supplied computer printouts of all firms in these areas according to their SIC and employment levels, and these were specified as being current and accurate for the year 1988. An industrial register of companies was provided by Hertfordshire County Council, compiled from their business databank in 1988, and this enabled the selection of study firms according to industrial groupings and employment size.

The Scottish sample was selected from the SDA publication "Electronics and Support Companies in Scotland, 1988", also derived from a database source. This directory clearly listed the employment size of the firm, and gave a description of the main area of productive activity from which it was possible to determine the SIC. Every care was taken to ensure that the overall sample consisted of the universe of relevant firms as far as possible. This involved checking Scottish regional council directories for firms missing from the SDA publication. As there was no equivalent to the SDA directory for the South Eastern subsample, the county council information was the only source. In all, 535 companies were identified in both regions, 355 in Cambridgeshire, Hertfordshire and Bedfordshire and 180 in Scotland, which met the twofold requirement of belonging to the stipulated SICs and employing 200 people or less. It was not possible to determine at this stage whether the sample firms were formed independently.

5.3.4 The postal questionnaire survey

An initial postal questionnaire survey was employed to perform two functions. First, the elimination of firms which were primarily concerned with the provision of services and/or which had been established as subsidiaries of other companies. Second, it enabled the collection of basic information on the general impact of venture capital on the study industry, and on the size and origins of the individual firms. This questionnaire was piloted with electronics firms based in the South West region of England and modified prior to the full-scale survey. Appendix 6 contains the final version of the postal questionnaire.

For the main study, 535 firms in Scotland and the South East of England were sent this brief two page postal questionnaire, a covering letter explaining the purpose of the research (see Appendix 7) and a business reply envelope. The initial reponse rate to this mailing was an encouraging 46 per cent consisting of 246 returned questionnaires. However, the exclusion of firms established as subsidiaries of other companies, service companies and those which had gone out of business resulted in a reduced useable response rate of 33 per cent. Although this falls within the standard acceptable response range of 30 to 50 per cent for a postal questionnaire survey (Harvey, 1987) it was considered prudent to attempt to increase the overall rate by undertaking a follow-up survey. Copies of the questionnaire and the original covering letter were sent to the non-respondents, together with a second covering letter (Appendix 8) and a business reply envelope. A period of six weeks lapsed between the mailing of the original postal survey and the follow-up, although this interval included a Christmas holiday period. The follow-up survey had the

desired conducive effect, and resulted in an increased overall response rate of 58 per cent (310 returned questionnaires). When those firms which were not relevant or had ceased trading were excluded, the response rate was reduced to 42 per cent consisting of 154 useable questionnaires from an effective universe of 371 firms.

5.3.5 Selection of the study firms - sample

As a result of the postal questionnaire survey, the number of respondent firms in both regions relevant to the study had been established. The 154 sample firms employed 200 employees or less, had been established as independent enterprises and were concerned mainly with the manufacture of products. A further filtration process was employed to enable the selection of personal interview firms according to their venture capital status. The firms were categorised in terms of whether they had Received Venture Capital funds (RVC), whether they had Not taken up Venture Capital (NVC), either due to refusal on their part or on the part of the provider, or whether they had NOt had any Contact with venture capital organisations (NOC). Whilst the interview questionnaire contained some questions common to all the respondents, the above categorisation enabled particular questions to be asked of specific groups of respondents.

Tables 5.2 to 5.4 illustrate the proportions of these three categories of firm in the sample according to the location of company and the number of employees. As far as possible, the same number of firms were sampled randomly from each category and location according to size. This was constrained by the fact that there were only 33 firms in total in receipt of venture capital finance, sixteen from Scotland and seventeen based in the South East, and that there were only fifteen

companies in the Scottish subsample not receiving venture capital funds (see Table 5.4). Therefore, the proposed overall sample size was 90 firms consisting of fifteen companies from each of the three venture capital categories in both regions. The initial sampling procedure posed a few problems in that there were not always enough firms of the correct employment size in each of the categories to sample on a random basis. Occasionally firms selected themselves because of the limited overall numbers involved and, in a few instances, a shortfall meant that the nearest firm in terms of the number of employees was included in a particular category.

Table 5.2 Firms receiving venture capital finance (RVCs) by location and size of firm

	Employee numbers									
	1 - 25		26 - 50		51 - 100		101 - 200		Total	
	n	(%)	n	(%)	n	(%)	n	(%)	n	(%)
South East England	6	(42.9)	4	(50.0)	6	(85.7)	1	(25.0)	17	(51.5)
Scotland	8	(57.1)	4	(50.0)	1	(14.3)	3	(75.0)	16	(48.5)
Total	14	(100.0)	8	(100.0)	7	(100.0)	4	(100.0)	33	(100.0)

Table 5.3 Firms <u>not</u> receiving venture capital finance (NVCs) by location and size of firm

	Employee numbers									
	1 - 25		26 - 50		51 - 100		101 - 200		Total	
	n	(%)	n	(%)	n	(%)	n	(%)	n	(%)
South East England	21	(77.8)	5	(55.6)	2	(50.0)	4	(50.0)	32	(66.7)
Scotland	6	(22.2)	4	(44.4)	2	(50.0)	4	(50.0)	16	(33.3)
Total	27	(100.0)	9	(100.0)	4	(100.0)	8	(100.0)	48	(100.0)

Table 5.4 Firms which have had no contact with venture capital organisations (NOCs) by location and size of firm

	Employee numbers									
	1 - 25		26 - 50		51 - 100		101 - 200		Total	
	n	(%)	n	(%)	n	(%)	n	(%)	n	(%)
South East England	43	(81.1)	8	(66.7)	6	(100.0)	1	(50.0)	58	(79.5)
Scotland	10	(18.9)	4	(33.3)	0	(0.0)	1	(50.0)	15	(20.5)
Total	53	(100.0)	12	(100.0)	6	(100.0)	2	(100.0)	73	(100.0)

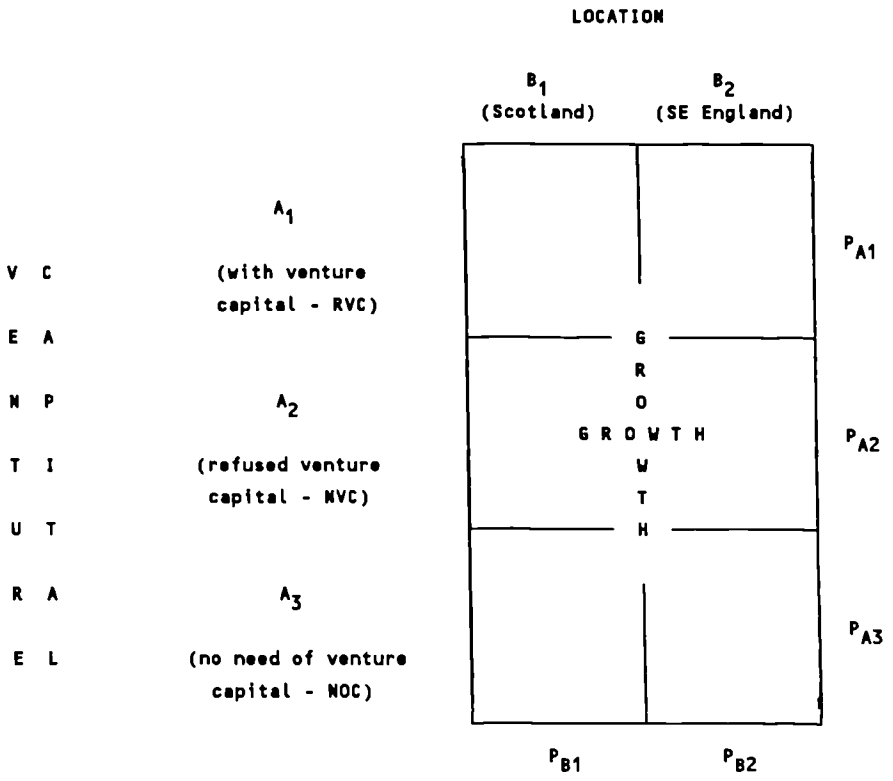
The ninety selected companies were then sent a letter (Appendix 9) attempting to enlist their cooperation for the next interview phase of the research. Inevitably, a small number of companies withdrew at this stage, either because of a policy of not giving interviews, or due to time constraints on the firm. As far as possible, these withdrawals were replaced by randomly sampling according to size from the remaining pool of initial relevant respondents. Ultimately, it was not possible to maintain the original aim of interviewing 90 companies. Replacement of the withdrawals was constrained by the overall limited number of firms available for interview in Scotland (that is, 47 in total). Ultimately, a substantial 83 companies agreed to participate in the interview stage of the study, a shortfall of only seven on the original target sample size.

5.3.6 The design of the research

The research proposes to test for the effect of availability and choice of venture capital finance, and propensity to apply for, and receive, such funds in both Scotland and the South East of England. Therefore, the research design includes two primary independent

variables, location and venture capital status (see Figure 5.1). With such a design three statistical tests can be conducted. The differences between proportions, represented by the letter P in the diagram, can be tested amongst A_1, A_2 and A_3, venture capital status ; for B_1 and B_2, location; and also for the interaction of A and B (Kerlinger, 1986).

Figure 5.1 The research design



Source: adapted from Kerlinger, 1986, p 282

This research design will, therefore, allow the testing of the hypotheses outlined earlier in Subsection 5.1.1.

5.4 PRELIMINARY STATISTICS FROM THE POSTAL SURVEY

5.4.1 Statistical approach employed during the data analysis

Before proceeding to a brief overview of the results of the postal questionnaire survey, it is important to establish the reasons for the choice of statistical technique employed in the analysis of these mainly categorical survey data. Since these data are categorical, it would be incorrect to assume that the population under study was normally distributed (Rowntree, 1984). This presents particular problems for the interpretation of the results, since many statistical techniques assume that the population distribution is normal. Nevertheless, it is still possible to test for significant differences between categorical data with non-parametric tests, which make no assumptions about the normality of the parameters of the population distribution (Rowntree, 1984). In the current case, the aim is to determine whether the differences observed in the proportions of the three venture capital status categories in the two geographical regions are significant.

The non-parametric chi-square statistic can be applied when the population is classified into <u>three or more</u> mutually exclusive categories (Bradley and South, 1981). The general form of the chi-square (χ^2) test statistic is as follows:

$$\chi^2 = \sum_{i=1}^{k} \frac{(O_i - E_i)^2}{E_i} \qquad \text{with } df = k - d - 1$$

Where:

k = the number of categories

E_i = the expected number of sample observations in the i^{th} category

O_i = the actual number of sample observations observed in the i^{th} category

d = the number of parameters that have to be estimated from the sample data (Bradley & South, 1981).

The df, or degrees of freedom, "... reflects the number of observations that are free to vary after certain restrictions have been placed on the data," (Siegel, 1956, p44). For example, if the information on thirty firms is classified into two categories such as Scotland and the South East of England, then when it is known that twelve firms have been assigned to the Scottish category, the other eighteen firms are known to occur in the South East category. Therefore, the df = 1 in this example because with two categories and a fixed number of firms, "... as soon as the number of cases in one category is ascertained then the number of cases in the other category is determined," (Siegel, 1956, p44). The Statistical Package for the Social Sciences (SPSSX) contains a standard program for producing contingency tables (CROSSTABS) and the chi-square statistic can be calculated from the contingency tables via the STATISTICS 1 command. The data presented in this and subsequent chapters were analysed in this form using the SPSSX program.

5.4.2 Advantages and disadvantages of non-parametric statistics

The major advantage of non-parametric statistical tests is that they do not rely on the assumption that the population is normally distributed. This is important when sample sizes are small because non-parametric statistics have to be used if the exact nature of the population is unknown (Siegel, 1956). These statistical tests can also be used with data that are categorical, or concerned with classifications, as in the case of this research. In addition, non-parametric tests are generally easier to conduct and understand than parametric tests (Levin, 1987) although this has not been a contributory factor in the decision to use the chi-square statistic for the analysis of these data.

There are a number of disadvantages associated with using non-parametric statistical tests including the fact that "they are often not as efficient or 'sharp' as parametric tests," (Levin, 1987, p627). Because broad categories are used instead of actual figures, a certain amount of information is lost, leading Siegel (1956) to comment that "... nonparametric statistical tests are wasteful of data," (Siegel, 1956, p33). Because detailed information is lost when the data is categorised, it is more difficult to detect differences between categories. Therefore, non-parametric tests require such differences to be much greater if significant results are to be obtained (Rowntree, 1984).

These are some of the general disadvantages associated with all non-parametric statistical tests, but there are also disadvantages specific to the chi-square test. If the expected frequencies in a chi-square test are small, then the value of the chi-square statistic

will be overestimated and could lead to misinterpretation of the result. There is a generally accepted rule that when there is an expected frequency of less than five in a contingency table, the chi-square statistic should not be used (Everitt, 1977; Levin, 1987). However, Norusis (1986) has determined that the chi-square statistic may be used as long as the number of cells with an expected frequency of less than five does not exceed 20 per cent of the total. It is also possible to collapse a table to combine categories if there is more than one cell with an expected frequency of less than five. However, this results in the loss of information (Levin, 1987) and can have an effect on the conclusions drawn from the table (Everitt, 1977). Awareness of such failings will limit the possibility of consequent misinterpretation.

It should be noted that the chi-square statistic is a bivariate form of analysis involving the comparison of two variables; that is, it is a measure of association. A number of proponents prefer multivariate analytical methods whereby multiple causes are identified for the 'effect', and the strength of the these relationships is estimated; that is, it is a measure of dependency (Kerlinger, 1986). Basically, large numerical data sets lend themselves more readily to multivariate forms of analysis and bivariate methods are useful for analysing smaller categorical data sets. Fine detail may be lost when using multivariate forms of analysis on categorical data from smaller samples, since this form of analysis can often act as a 'black box' in which causal relationships are established without any indication of why or how. Bivariate methods are useful for analysing individual pairs of variables in detail, building 'associations' between any number of variables through a step-by-step approach. Incidentally,

this also increases the likelihood of obtaining significant results, although this did not contribute to the decision to use the chi-square statistic. The chi-square result and significance level are only given with tables in this thesis when the result is significant; that is, when there is a less than 5 per cent possibility ($p < 0.05$) that the result obtained is due to chance (Kerlinger, 1986).

There now follows a general statistical overview of the 154 firms which replied to the postal questionnaire survey. Although caution is necessary in the interpretation of the following results due to the lack of information concerning the non-respondents, the data are useful in providing background information to the five subsequent empirical chapters.

5.4.3 Age of the postal survey firms

Table 5.5 dichotomises the age of the 154 postal survey firms in terms of whether they were founded prior to 1980, or from 1980 onwards. The table categorises the location of the South Eastern firms according to the three individual counties of Cambridgeshire, Hertfordshire and Bedfordshire, and the Scottish firms are grouped together. The locational analysis in later chapters will combine the three English counties into one category. For the moment, however, it is useful to consider the counties separately. It is clear from Table 5.5 that the Cambridgeshire and Scottish areas have experienced a greater number of technological start-ups in the target industry relative to the other two regions. Twenty eight of the Cambridgeshire-based firms (49 per cent) and 19 firms from Scotland (40 per cent) had been established within the last ten years. This compares with 4 firms (16 per cent) in both Hertfordshire and Bedfordshire. This table is significant at

the $p=0.004$ level following a chi-square test, and confirms the aforementioned findings of a number of authors that Cambridgeshire and Scotland are productive seed-beds for a number of high technology firms.

Table 5.5 Age of postal survey firms by location

	Cambs.		Herts.		Beds.		Scotland		Total	
	n	(%)	n	(%)	n	(%)	n	(%)	n	(%)
Established pre-1980	29	(50.9)	21	(84.0)	21	(84.0)	28	(59.6)	99	(64.3)
Established 1980+	28	(49.1)	4	(16.0)	4	(16.0)	19	(40.4)	55	(35.7)
Total	57	(100.0)	25	(100.0)	25	(100.0)	47	(100.0)	154	(100.0)

Chi-square (3 d.f.) = 13.382 $p = 0.004$

5.4.4 Independent status of the postal survey firms

As stated earlier, this research is only concerned with those firms which were established as independent enterprises. That is not to say, however, that firms which were originally founded independently but subsequently became acquired could not be included in the sample. Indeed, those firms which have been aquired may have an interesting financial history in the pre- and post-acquisition phases. According to Table 5.6, the majority of respondent firms (118 companies or 77 per cent) have remained independent since formation, whilst only 35 companies (23 per cent) had been acquired. Considering this table on a regional basis, it appears that the Cambridgeshire-based firms are particularly noteworthy for maintaining their independent status. Fifty one of the companies operating in the Cambridgeshire area (90 per cent) were independent at the time of the survey. This compares with 19 firms (76 per cent) in Hertfordshire, 32 enterprises (70 per

cent) in Scotland and 16 companies (64 per cent) in Bedfordshire. The chi-square test on these data was significant at the $p=0.031$ level. This significance might be explained by the fact that the majority of firms located in Hertfordshire, Bedfordshire and Scotland had been formed prior to 1980, whereas almost half (49 per cent) of the Cambridgeshire-based companies had been established since that date. Thus, Cambridgeshire firms are younger and may not have reached the stage where the founder has chosen, or has been forced, to sell-out. It may also be the case that the general industrial infrastructure of the region is conducive to the birth and independent growth of young, small high technology companies (Segal Quince and Partners, 1985) reducing the number which need to sell out to survive.

Table 5.6 Independent status of postal survey firms by location

	Cambs.		Herts.		Beds.		Scotland		Total	
	n	(%)	n	(%)	n	(%)	n	(%)	n	(%)
Independent	51	(89.5)	19	(76.0)	16	(64.0)	32	(69.6)	118	(77.1)
Acquired	6	(10.5)	6	(24.0)	9	(36.0)	14	(30.4)	35	(22.9)
Total	57	(100.0)	25	(100.0)	25	(100.0)	46	(100.0)	153	(100.0)

Chi-square (3 d.f.) = 8.876 $p = 0.031$

5.4.5 Size of the postal survey firms

Table 5.7 indicates that most of the firms replying to the postal questionnaire survey employed 25 full-time staff or less. Ninety four firms (61 per cent) belonged to this size range, compared with only 29 companies (19 per cent) employing between 26 and 50 people, 17 firms (11 per cent) with between 51 and 100 employees and 14 enterprises (9 per cent) employing over 100 members of staff. Interestingly, the Scottish-based firms are prominent in the larger category of 101 to

200 employees, but this difference is not significant. Similarly, Table 5.8 does not exhibit any significant difference between company size in terms of the number of employees and the age of the survey firm. It is noteworthy, however, that a slightly higher percentage of firms established within the last ten years employed 25 or less full-time people; 40 companies (73 per cent) compared with 54 firms (55 per cent) in the pre-1980 establishment category. This would seem reasonable as the older firms have had a longer time period in which to grow in size. Both Table 5.7 and 5.8 would also appear to support the argument that, generally speaking, 'small' in terms of high technology firms is of the order of 50, or maybe even 25 employees or less.

Table 5.7 Size of postal survey firm in terms of employment by location

	Cambs.		Herts.		Beds.		Scotland		Total	
Employees	n	(%)	n	(%)	n	(%)	n	(%)	n	(%)
1 - 25	40	(70.2)	14	(56.0)	16	(64.0)	24	(51.1)	94	(61.0)
26 - 50	8	(14.0)	3	(12.0)	6	(24.0)	12	(25.5)	29	(18.8)
51 - 100	6	(10.5)	6	(24.0)	2	(8.0)	3	(6.4)	17	(11.0)
101 - 200	3	(5.3)	2	(8.0)	1	(4.0)	8	(17.0)	14	(9.1)
Total	57	(100.0)	25	(100.0)	25	(100.0)	47	(100.0)	154	(100.0)

Table 5.8 Size of postal survey firm in terms of employment by year of formation

Employees	Year of formation: Pre-1980 n	Pre-1980 (%)	1980 onwards n	1980 onwards (%)	Total n	Total (%)
1 - 25	54	(54.5)	40	(72.7)	94	(61.0)
26 - 50	21	(21.2)	8	(14.5)	29	(18.8)
51 - 100	13	(13.1)	4	(7.3)	17	(11.0)
101 - 200	11	(11.1)	3	(5.5)	14	(9.1)
Total	99	(100.0)	55	(100.0)	154	(100.0)

5.4.6 Main product of the postal survey firms

The postal questionnaire survey was also a useful method of confirming the industrial classification of the study firms. The respondents were asked to specify the main product of the firm in terms of the largest contributor to gross sales during the last financial year, and Appendix 5 provides examples of products and the categories to which they have been assigned. Although not significant, Table 5.9 does exhibit some interesting regional data. Firms based in Scotland, Hertfordshire and Bedfordshire were mostly concerned with the manufacture of precision instrumentation. In all three cases, more than 70 per cent of the firms in the three regions gave this response (36 firms in Scotland, 19 in Hertfordshire and 16 in Bedfordshire). Cambridgeshire also had a sizeable number of respondent firms manufacturing precision instrumentation (35 firms or 61 per cent) but is also noticeable for the highest incidence of respondent firms producing electronic capital goods (22 firms or 39 per cent). Overall, Table 5.9 illustrates that the majority of firms in the

sample (106 in number or 70.2 per cent) were more concerned with the production of precision instrumentation than the manufacture of electronic capital goods.

Table 5.9 Main productive area of postal survey firms by location

	Cambs.		Herts.		Beds.		Scotland		Total	
	n	(%)	n	(%)	n	(%)	n	(%)	n	(%)
Precision instruments	25	(43.9)	13	(52.0)	15	(68.2)	32	(68.1)	85	(56.3)
Medical prec. instruments	10	(17.5)	6	(24.0)	1	(4.5)	4	(8.5)	21	(13.9)
Electronic capital goods	22	(38.6)	6	(24.0)	6	(27.3)	11	(23.4)	45	(29.8)
Total	57	(100.0)	25	(100.0)	22	(100.0)	47	(100.0)	151	(100.0)

5.4.7 Postal survey firm contact with venture capital organisations

An important function of the postal questionnaire survey was to ascertain both the incidence of contact with venture capital organisations, and the occurrence of venture capital funding. There was no significant difference in level of contact with venture capital providers between the different age categories of respondent firms. There was, however, a significant and interesting result with regard to the location of the postal survey companies. Table 5.10 illustrates that the majority of firms located in Scotland (68 per cent) and Cambridgeshire (56 per cent) had some form of contact with suppliers of venture capital finance prior to the survey (32 firms in both regions). In contrast, 17 companies (68 per cent) in Hertfordshire and 16 firms (64 per cent) in Bedfordshire had not been approached, or had chosen not to approach venture capital organisations for investment finance. This table was significant at the $p=0.008$ level following a chi-square test. It may be possible to

connect this result to the aforementioned observation that Scotland and Cambridgeshire have experienced a high level of technological start-ups in the study industry. The next subsection considers these findings in relation to the incidence of venture capital funding and location of the postal survey firms.

Table 5.10 Incidence of postal survey firm contact with venture capital organisations by location

	Cambs.		Herts.		Beds.		Scotland		Total	
	n	(%)	n	(%)	n	(%)	n	(%)	n	(%)
Contact	32	(56.1)	8	(32.0)	9	(36.0)	32	(68.1)	81	(52.6)
No contact	25	(43.9)	17	(68.0)	16	(64.0)	15	(31.9)	73	(47.4)
Total	57	(100.0)	25	(100.0)	25	(100.0)	47	(100.0)	154	(100.0)

Chi-square (3 d.f.) = 11.825 $p = 0.008$

It emerges that there is a significant association between initial contact with venture capital providers and the size of the survey firm. Those firms with higher levels of turnover and number of employees are more likely to have had discussions with venture capital organisations (see Tables 5.11 and 5.12). Thirty nine of the respondent firms (63 per cent) with a turnover of one million pounds or over had spoken to representatives of venture capital institutions, compared with only 4 firms (24 per cent) with a turnover of less than one hundred thousand pounds (Table 5.11). Likewise, 12 of the survey firms (86 per cent) employing over 100 members of staff had contact with providers of venture capital finance, compared with 41 companies (44 per cent) with up to 25 full-time employees (Table 5.12). Both Table 5.11 and 5.12 are significant after a chi-square statistical test at the level of $p=0.031$ and $p=0.014$ respectively. These results partly explain the previous observation that Scottish respondents had

a higher degree of contact with venture financiers than those located in the South East region, since it was also noted that a higher number of respondent firms in Scotland employed between 100 and 200 members of staff. It is not possible to determine the direction of the relationship between 'contact' and 'growth' of the survey firms; that is, it is not clear whether contact causes growth or growth attracts contact from venture capital providers. However, when it comes to actually receiving venture capital finance, it emerges that there is no significant correlation with the size of the survey firm.

Table 5.11 Incidence of postal survey firm contact with venture capital organisations by level of turnover

	Level of turnover (£000s)								Total	
	0 - 99		100 - 499		500 - 999		1,000 +			
	n	(%)	n	(%)	n	(%)	n	(%)	n	(%)
Contact	4	(23.5)	21	(47.7)	17	(54.8)	39	(62.9)	81	(52.6)
No contact	13	(76.5)	23	(52.3)	14	(45.2)	23	(37.1)	73	(47.4)
Total	17	(100.0)	44	(100.0)	31	(100.0)	62	(100.0)	154	(100.0)

Chi-square (3 d.f.) = 8.883 $p = 0.031$

Table 5.12 Incidence of postal survey firm contact with venture capital organisations by employment level

	Employee numbers								Total	
	1 - 25		26 - 50		51 - 100		101 - 200			
	n	(%)	n	(%)	n	(%)	n	(%)	n	(%)
Contact	41	(43.6)	17	(58.6)	11	(64.7)	12	(85.7)	81	(52.6)
No contact	53	(56.4)	12	(41.1)	6	(35.3)	2	(14.3)	73	(47.4)
Total	94	(100.0)	29	(100.0)	17	(100.0)	14	(100.0)	154	(100.0)

Chi-square (2 d.f.) = 10.621 $p = 0.014$

5.4.8 Postal survey firms and the incidence of venture capital funding

Overall, of the 154 firms responding to the postal questionnaire survey, 73 (47 per cent) had not had any form of contact with venture capital organisations (NOCs); 48 (31 per cent) after either initial enquiries to or overtures from the financiers had not taken up the capital (NVCs); and 33 companies (21 per cent) had obtained venture capital funds (RVCs). Table 5.13 also illustrates that there is a stronger tendency for recently formed companies to acquire venture capital funds. Seventeen firms (31 per cent) founded within the last decade have received venture capital finance, compared with 16 companies (16 per cent) established prior to 1980; and only 21 newer companies (38 per cent) as opposed to 52 older firms (53 per cent) had no contact with venture capital providers. The chapters based on the interview survey data will attempt to determine whether this tendency is due to the recent emergence of the venture capital industry in the United Kingdom and/or a particular attraction to early stage investments by venture capital providers.

Table 5.13 Incidence of venture capital funding in postal survey firms by year of formation

	Year of formation					
	Pre-1980		1980 onwards		Total	
	n	(%)	n	(%)	n	(%)
Received venture capital (RVC)	16	(16.2)	17	(30.9)	33	(21.4)
Not received venture capital (NVC)	31	(31.3)	17	(30.9)	48	(31.2)
No contact (NOC)	52	(52.5)	21	(38.2)	73	(47.4)
Total	99	(100.0)	55	(100.0)	154	(100.0)

Chi-square (2 d.f.) = 5.125 $p = 0.077$

The most interesting result to emerge from the preliminary analysis of the impact of venture capital on the study industry lies in the relationship between the take up of venture capital funds and location of the survey firm. Table 5.14 indicates that a significant 16 firms (34 per cent) operating in Scotland had received venture capital funds, compared with only 13 companies (23 per cent) in Cambridgeshire and 2 enterprises (8 per cent) in both Hertfordshire and Bedfordshire (chi-square test significant at the p=0.023 level). Indeed, the majority of firms (over 60 per cent) located in the latter two counties had not had contact with venture capital organisations. Perhaps this indicates that firms in the South East are more self-reliant and do not require venture capital assistance.

Table 5.14 Incidence of venture capital funding in postal survey firms by location

	Cambs.		Herts.		Beds.		Scotland		Total	
	n	(%)	n	(%)	n	(%)	n	(%)	n	(%)
Received venture capital (RVC)	13	(22.8)	2	(8.0)	2	(8.0)	16	(34.0)	33	(21.4)
Not received (NVC)	19	(33.3)	6	(24.0)	7	(28.0)	16	(34.0)	48	(31.2)
No contact (NOC)	25	(43.9)	17	(68.0)	16	(64.0)	15	(31.9)	73	(47.4)
Total	57	(100.0)	25	(100.0)	25	(100.0)	47	(100.0)	154	(100.0)

Chi-square (6 d.f.) = 14.671 p = 0.023

This is a very significant result which could entail the rejection of one of the major hypotheses of the research. If this result is confirmed by the survey data from the personal interview sample, then it could not be claimed that Scotland is at a disadvantage compared with the South East of England in terms of the supply of venture capital

finance. This hypothesis will be tested along with others in the following empirical chapters which mainly comprise data gathered from the personal interview survey.

Chapter 6

DECISIONS ON FUNDING SOURCES AND THEIR APPLICATION

6.1 INTRODUCTION

6.1.1 Sources of investment finance

The requirement for start-up funds is fundamental to any business. However, decisions concerning the source(s) of this initial finance present a complex picture. The entrepreneur may have the opportunity to utilise personal sources of capital, such as savings and/or those of family and friends, before approaching financial institutions. If personal money is not available, the small business founder is compelled to become involved, at an early stage, in a search for external capital. Banks tend to be among the first of the possible sources approached by entrepreneurs at the start-up stage (Haslett, 1981), and loans are frequently secured against personal guarantees. This requirement is exercised since start-up businesses do not have the commercial assets against which to secure a more commercial type business loan (Mayer and Goldstein, 1961). Young (1985) arrived at the conclusion that "most high-technology start-up companies are not in their early stages candidates for bank borrowing ...," (p190) and this supports the findings of Oakey (1985) that many small high

technology firms are established by means of personal finances. One advantage of this early independency is that it demonstrates the commitment of the entrepreneur when attempting to raise subsequent additional finance from external institutional sources at a later date (Gibb and Ritchie, 1982; Williams, 1987).

Ideally, entrepreneurs should seek to obtain the most appropriate type of finance for their need (Williams, 1987); for example, short term bank funding for working capital requirements and long term equity capital for prolonged research and development purposes. However, previous research indicates that there are two forces at work which impede this process. On the demand side, there is a tendency on the part of the entrepreneur to limit applications for external finance to his own bank (Gibb and Ritchie, 1982). This limited search behaviour suggests that entrepreneurs may not always be aware of the complete range of fund raising opportunities available and how to take advantage of them (Gibbons and Watkins, 1981; Haslett, 1981). Additionally, on the supply side, there is a perceived lack of adequate finance available for the technology-based firm both at start-up and later development stages (Gibbons and Watkins, 1981; Grieve Smith and Fleck, 1989). It has been postulated that it is not the scarcity of information on sources and types of finance or even the lack of finance itself that is the problem, but rather the confusion caused by the vast array of complex financial instruments with associated terms and conditions (Woodcock, 1985). Often these demand and supply problems interact and lead to the entrepreneur making inappropriate approaches to financiers. For example, the entrepreneur may apply for "... short term finance such as overdraft facilities for the purchase of plant and equipment," (Binks et al.,

1988, p271); or ask for "... long-term finance from his clearing bank," (Woodcock, 1985, p9). This sort of behaviour means that entrepreneurs may be paying more for their investment capital than is necessary and, as such, they are inappropriate choices.

6.1.2 Investment finance and growth

A potentially serious problem arising from this incongruity is that a number of firms which are possible high fliers may experience unnecessary growing pains. For instance, a firm in its early stages may exhaust the available supply of a particular type of finance, such as an increased overdraft facility, which might have been applied more appropriately at a later stage, perhaps to fund working capital requirements during a rapid growth phase (Binks et al., 1988). It is precisely during such an expansionary phase that the need for finance by the small innovative company may be at its greatest level since start-up (Oliver, 1981). If the firm is generating sufficient profits then it is likely that these will be used to finance growth since many small firms try to avoid making use of outside capital (Grieve Smith and Fleck, 1987). However, there is evidence to suggest that firms making use of external investment finance achieve more rapid progress and tend to be more innovative than those depending entirely on 'ploughed back' profits (Oakey, 1984b). It should be remembered that the investment strategy of the firm will partially depend upon the prevailing economic climate since, for example, companies may pursue a more politic rationalisation strategy rather than invest in new product development during a period of high interest rates.

6.1.3 Disadvantages of external finance

Once the firm has decided to seek external support it must then address the question of which source of capital to utilise. The entrepreneur, having depleted his own personal resources at start-up, is required usually to provide collateral in return for bank finance and more often than not this takes the form of his own house (Lorenz, 1985). Thus, Binks et al. (1988) have observed that smaller firms are not encouraged to grow by the use of bank funds because of the penalties incurred, both in terms of security requirements and the costs of obtaining the funds. Other available sources of capital include public sector finance in the form of grants and/or loans, but research has shown that the processes involved in applying for government assistance can be protracted and complicated (Oakey, 1984b). Moreover, the amounts obtained from government sources constitute only a minimal, albeit welcome addition to the finances of a firm (Oakey et al., 1988). This would imply that entrepreneurs are unlikely to rely solely on government grants and/or loans to support the development of their companies.

The entrepreneur may also have the opportunity to raise equity capital, over and above that already provided by himself and/or family and friends, in return for a stake in the business (Wilson Report, 1979). However, some small businessmen are reluctant to surrender part ownership of their company fearing that this could lead to eventual loss of control (Lorenz, 1985; Woodcock, 1986; Grieve Smith and Fleck, 1987; Oakey et al., 1988). The entrepreneur may even delay plans for expansion if the only financial option involves relinquishing part of the equity of his company (Wilson Report, 1979). Nevertheless, equity finance is an effective alternative for the

entrepreneur wishing to invest in the future growth of the firm at a time when its current financial structure does not permit the acquisition of additional loan capital (Lorenz, 1985).

It is important to note from the above discussion that "the terms on which capital is available, from the banks, venture capital funds and other financial institutions, ... have an important bearing on the type of strategy followed," (Grieve Smith and Fleck, 1989, p216). This raises the issue of whether entrepreneurs are aware of the range of fund raising opportunities available and whether they approach the most appropriate source of finance for their particular venture.

6.2 START-UP FINANCE

The Wilson Report (1979) identified two consequences of the 'equity gap' first discussed in Chapter 2 of this thesis. First, a distinct lack of funds available for new start-ups and, second, difficulty in obtaining development capital for established companies. This section considers the former issue by looking at the sources and amounts of finance accessed by the interview survey firms at start-up. The latter concern will be discussed in detail in subsequent sections of this chapter.

6.2.1 Internal versus external sources

The majority of respondents in this study (53 firms or 74 per cent) stated that their main source of start-up capital was internal to the firm (Table 6.1). A small number of firms were unable to specify the exact origin of this internal capital since they were founded a number

of years ago, and the original founders were no longer with the company. However, the internal sources cited were mainly personal monies, comprising the savings of the founder, redundancy money and/or funds obtained by re-mortgaging personal property (37 firms) and finance obtained from family members (5 firms). These results bear out the findings of previous studies where personal finances were used most often to establish new businesses. The main source of start-up finance was correlated with the location variable, however, this did not appear to have an effect on whether internal or external funds were used at start-up.

Table 6.1 Main source of start-up capital over time

	Year firm was founded									
	Pre 1960		1960-1969		1970-1979		1980-		Total	
	n	(%)	n	(%)	n	(%)	n	(%)	n	(%)
Internal	3	(100.0)	6	(85.7)	24	(77.4)	20	(64.5)	53	(73.6)
External	0	(0.0)	1	(14.3)	7	(22.6)	11	(35.5)	19	(26.4)
Total	3	(100.0)	7	(100.0)	31	(100.0)	31	(100.0)	72	(100.0)

Table 6.1 also illustrates a declining tendency as age increases for firms to make use of external capital as the main financial means of starting the company. Eleven firms (36 per cent) founded in the 1980s used external funds compared with 7 in the 1970s (23 per cent) one company (14 per cent) in the 1960s, and no firms prior to 1960. These nineteen companies were investigated in greater detail in order to determine the source of the external start-up finance. Banks are a traditional source of finance for the business community, and there has been a marginal increase in the extent to which they have been used as a source of start-up capital in recent years (2 firms or 29

per cent in the 1970s and 5 firms or 46 per cent in the 1980s). This may be a reflection of increased marketing efforts in the light of competition, not only from other banks but also from a rising number of venture capital organisations. Interestingly, venture capital as a source of start-up finance was also accessed by 2 respondent firms (29 per cent) in the 1970s and 5 companies (46 per cent) in the 1980s. Venture capitalism is a relatively new phenomenon and the recent increase in its usage may be due to growing awareness of its availability, and also a consequence of the sheer volume of funds chasing investment opportunities as the venture capital industry grew throughout the 1980s. Although actual numbers are small, over one third of the survey firms utilising external start-up finance (7 firms or 37 per cent) accessed venture capital funds for this purpose. However, putting this in the context of the total sample, only 8 per cent of the survey firms received venture capital finance to start up in business. This is not surprising since many commentators maintain that venture capital organisations are not interested in start-up ventures, especially those involving high technology products (see also Chapter 4 and the forthcoming arguments in Chapter 7).

Table 6.2 considers the source of start-up finance with regard to whether the firm at any stage adopted venture capital funding. A total of 27 companies (38 per cent) had received venture capital finance and, of these, 12 firms (63 per cent) had been established with mainly external capital and 15 firms (28 per cent) founded with internal capital. This result shows a significant difference at the level of $p=0.007$ following a chi-square test, but account should be taken of the fact that seven of the twelve externally financed start-ups used venture capital finance to finance the start-up. However,

the remaining five firms had employed other external start-up funds, and did not appear to be averse to making use of venture capital funding at a later stage. Internally financed start-ups are prevalent in the two non-adopter classifications where firms either had no contact with venture capital providers in the first place (NOCs) or investigated the possibility of venture capital funding only to refuse or be refused the finance (NVCs). This may be due to a number of factors, for example, the relative costs of venture capital compared with other forms of finance, or the reluctance to relinquish equity as part of the deal. Such issues will be investigated in greater detail in subsequent chapters.

Table 6.2 Incidence of venture capital funding by main source of start-up finance

	Internal		External		Total	
	n	(%)	n	(%)	n	(%)
Received venture capital (RVC)	15	(28.3)	12	(63.2)	27	(37.5)
Not received venture capital (NVC)	26	(49.1)	2	(10.5)	28	(38.9)
No contact with venture capitalists (NOC)	12	(22.6)	5	(26.3)	17	(23.6)
Total	53	(100.0)	19	(100.0)	72	(100.0)

Chi-square (2 d.f.) = 10.997 $p = 0.007$

6.2.2 Amount of start-up finance

Having looked at the internal/external nature of the main source of start-up funds acquired by entrepreneurs to establish their companies, it is useful to examine the amounts obtained from these sources. The amount of start-up finance used by the respondent companies was dichotomised into broad categories, resulting in the emergence of a strong trend (Table 6.3). Forty one firms (80 per cent) using mainly

internal funds for start-up accessed amounts of up to £25,000. On the other hand, only six firms (38 per cent) utilised start-up capital of £25,000 or less in the category where the main source was external in origin. Further investigation of these figures revealed that 11 of the 41 firms using internal capital of less than £25,000 in value, required only one thousand pounds or less to establish the company. The industrial sub-sectors in which the firms operate were subsequently analysed to see if there was a requirement for greater or smaller amounts of start-up capital in specific areas of operation. However, the results showed that this was evenly distributed throughout each of the industrial classifications. Likewise, the location of the firm did not appear to have any effect on the quantity of money obtained at start-up.

Table 6.3 Amount of start-up capital by main source of start-up finance

	Internal		External		Total	
	n	(%)	n	(%)	n	(%)
Up to £25,000	41	(80.4)	6	(37.5)	47	(70.1)
Over £25,000	10	(19.6)	10	(62.5)	20	(29.9)
Total	51	(100.0)	16	(100.0)	67	(100.0)

Another interesting result with regard to the amount of capital at start-up was that firms established in the 1970s and 1980s utilised greater sums of money in the process (Table 6.4). No companies founded prior to 1970 used more than £25,000, however, 16 firms (52 per cent) established in the 1980s required finance in excess of this amount. Since many firms still required less than £25,000 to start-up in recent years, this trend may not be due to inflation resulting in

increasing start-up costs over time, but rather a reflection of the greater use of external finance, and the amounts generally available from these sources. Amongst the external sources of capital, the banks provided start-up finance in both the less than and the greater than £25,000 categories, with one founder accessing £140,000. On the other hand, the seven entrepreneurs using venture capital received between £50,000 and one million pounds to establish their companies. By generally providing amounts in excess of banks, it would seem that venture capital organisations are filling a gap in the market for larger single amounts of start-up capital. The unique aspects of venture capital funding will be considered in detail in Chapter 10.

Table 6.4 Amount of start-up capital by year of formation

	Year firm was founded									
	Pre 1960		1960-1969		1970-1979		1980-		Total	
	n	(%)	n	(%)	n	(%)	n	(%)	n	(%)
Up to £25,000	2	(100.0)	6	(100.0)	24	(85.7)	15	(48.4)	47	(70.1)
Over £25,000	0	(0.0)	0	(0.0)	4	(14.3)	16	(51.6)	20	(29.9)
Total	2	(100.0)	6	(100.0)	28	(100.0)	31	(100.0)	67	(100.0)

6.3 SUBSEQUENT FINANCE

The following analysis of sources of post-establishment funds excludes a detailed treatment of the use of venture capital finance, since this will be investigated in greater detail in Chapter 7. Nonetheless, there may be some reference in the following sections of this chapter

as to whether firms have taken up venture capital finance, either at start-up or at a later stage, in order to provide complete information about the financial history of the survey firms.

6.3.1 First source of external finance after start-up

In order to ascertain whether the repondents were aware of the range of funding opportunities available, information was sought on the first source of external finance obtained by the company after establishment. Nine of the 53 survey firms (17 per cent) which used internal sources of start-up capital had not approached external financiers (Table 6.5). Since six of these companies had been founded prior to 1980, the absence of external funds cannot be attributed solely to the youth of these enterprises. More significantly, with the exception of one firm, all were achieving substantial profit levels, enabling them to continue operating without external finance.

Table 6.5 Incidence of subsequent external investment by main source of start-up capital

	Internal		External		Total	
	n	(%)	n	(%)	n	(%)
Adopted subsequent external finance	44	(83.0)	14	(73.7)	58	(80.6)
Not adopted subsequent external finance	9	(17.0)	5	(26.3)	14	(19.4)
Total	53	(100.0)	19	(100.0)	72	(100.0)

Fourteen firms (74 per cent) already familiar with external capital through the start-up process made use of subsequent external finance, compared with 44 companies (83 per cent) which had previously only employed internal funds (Table 6.5). This marginal increase in

percentage terms may be a reflection of the generally smaller amounts of capital available at start-up from internal sources causing some entrepreneurs to seek early additional external funds. Likewise, a number of those businesses established with greater amounts of external capital may be able to stabilise and sustain their position without recourse to additional external sources of finance.

6.3.2 Reasons for seeking external finance after start-up

Before interpreting the data contained in Table 6.6, it is useful to define the requirements mentioned by the survey firms as leading to their first use of external capital after start-up. These fall broadly into three categories; working capital, finance for the purchase of major assets, and development capital.

All firms require a certain level of capital to fund their day-to-day operations and, if this is not available in-house, entrepreneurs will have to apply to external sources to supplement their working capital needs. Banks are a common source of such finance and many small firms make extensive use of overdraft facilities. A higher level of investment involving a different type of financial instrument is required when the company decides to purchase major assets such as plant and machinery. The external financial options available to the firm include traditional high street bank loans, funds from merchant banks, financial agreements with finance or credit houses, private individual funds and venture capital finance. The final need identified by the survey firms, the requirement for development capital, is differentiated from the requirement for funds to purchase fixed assets since the former implies that development takes place within the existing infrastructure of the firm. Development capital

includes the research and development effort of the company. Indeed, the requirement for finance to maintain research and development may be constant and cumulatively large when compared with the purchase of one-off fixed assets.

Table 6.6 shows that the main stimulus in the search for external funds after start-up in both the South East of England and Scotland was the requirement for working capital (17 firms, 55 per cent and 15 firms, 47 per cent respectively). This was also the case for firms across all the industrial classifications in this study. There was a slight regional variation in terms of the second most cited requirement for subsequent external finance. Nine of the Scottish firms (28 per cent) indicated that their first search for external capital after start-up was set in motion by the need for development funds, compared with 5 firms (16 per cent) in the South East of England. In the English subsample, the necessity to purchase plant and machinery was the second most common requirement for post-establishment funds. Examination of the combined Scotland and South East figures over time revealed a change in emphasis in terms of the second most popular stimulus; from purchasing assets in the 1970s to the need for development capital in the 1980s. This switch may be due partly to the advice given to entrepreneurs that they should avoid spending large amounts of capital on plant and machinery in the formative years of the firm, and use hire purchasing and leasing facilities. It should be pointed out that the discrepancy in the total number of firms adopting subsequent external finance between Tables 6.5 and 6.6 is due to a number of respondents who did not know the source of start-up capital.

Table 6.6 Major requirement for subsequent external finance by region

	South East England		Scotland		Total	
	n	(%)	n	(%)	n	(%)
Working capital	17	(54.8)	15	(46.9)	32	(50.8)
Development capital	5	(16.1)	9	(28.1)	14	(22.2)
Purchasing of assets	6	(19.4)	5	(15.6)	11	(17.5)
Other	3	(9.7)	3	(9.4)	6	(9.5)
Total	31	(100.0)	32	(100.0)	63	(100.0)

6.3.3 External sources of finance after start-up

BANK SOURCES

Investigation of the external sources approached for post-establishment capital revealed that 6 firms (43 per cent) which made use of bank finance at start-up went back to that same provider. Further analysis was undertaken to determine whether this was a case of staying with a tried and tested source, rather than approaching the most appropriate financier for the identified need. Some of the companies obtained bank loans and extended overdrafts when approaching their bank for the first time after start-up, and the following data take this into account. In three cases bank loans were used for cashflow purposes, and in two instances companies used the more traditional bank overdraft facility. In terms of purchasing fixed assets, two firms used the more traditional bank loan whilst one respondent worked with an extended existing overdraft facility. Generally speaking, firms would be expected to use bank overdrafts in preference to loans to fund working capital requirements, since overdraft interest is calculated only on the outstanding amount of the balance, albeit at a higher rate than with a bank loan. Perhaps some companies have been overextending themselves by purchasing assets with

an overdraft or, conversely, by taking out loans to finance their daily operations. Such transactions would be termed inappropriate in terms of minimising the exposure of a firm to financial risk.

Interestingly, a number of survey firms which had used only internal funds to start-up subsequently applied for more appropriate types of external finance. Three firms obtained bank loans to fulfil requirements for fixed assets, and the working capital needs of 12 companies were largely met by bank overdraft facilities. Nonetheless, 10 previously internally-funded companies used less appropriate financial sources of working capital, including bank loans, government agency/authority grants and Loan Guarantee Scheme funds. It may be that these firms simply accessed any available funds in order to maintain operations.

GOVERNMENT SOURCES

Two companies, initially established with external capital, were seeking further funds for development purposes, and received grants or loans from government sources. However, government funding was more in evidence amongst firms approaching external financiers for the first time after start-up. These firms simply may have been taking advantage of government incentives, or the public sector may have been their last resort if they were unable to obtain funds from private sector sources. Government finance was also used by two previously internally-funded companies to purchase plant and machinery, and a similar number approached finance/credit houses for this purpose.

Overall, fourteen firms did not appear to use the most appropriate source of finance for their particular needs (see Subsection 6.1.1). Surprisingly, firms which were approaching external financiers for the first time tended to make more appropriate connections between the need for funds and the source of finance. It is possible that previously internally funded businesses were more inclined to seek out current information and assistance when going to external financiers for the first time. It might be the case that these financiers then recommend appropriate finance for the particular requirements of the firm. On the other hand, perhaps entrepreneurs which utilised external capital at start-up did not seek out current information because they believed they were familiar with the available external financial options. Therefore, they might have applied for finance according to the dated, situation specific information gathered at start-up.

Table 6.7 examines the sources of subsequent finance in a little more detail. Firms located in the South East of England made more extensive use of bank loans and overdrafts (24 firms or 80 per cent) than Scottish-based companies (12 in number or 39 per cent) resulting in a significance level of $p=0.001$ after a chi-square test. Scottish companies mostly utilised government incentives and a number of other sparsely represented sources including private individuals, finance/credit houses and an ex-parent company. This result is not surprising since small firms located in Scotland had access to regional grants and loans not available to firms in the South East, although such incentives are declining in number (see Chapter 3). It is likely that, in the past, banks have been an alternative source to public sector finance in the South East of England.

Table 6.7 Source of subsequent external finance by region

	South East England		Scotland		Total	
	n	(%)	n	(%)	n	(%)
Bank sources	24	(80.0)	12	(38.7)	36	(59.0)
Government sources and other	6	(20.0)	19	(61.3)	25	(41.0)
Total	30	(100.0)	31	(100.0)	61	(100.0)

Chi-square (1 d.f.) = 10.747 $p = 0.001$

6.3.4 Amounts obtained from external sources after start-up

With reference to the amounts of finance required according to the needs identified by the entrepreneur and the sources used, it emerged that firms in the South East of England obtained greater amounts of initial external capital after start-up. Seventeen firms (65 per cent) based in the South East of England accessed finance in excess of £50,000, compared with a lesser eleven companies (41 per cent) in Scotland. Firms in the South Eastern sub-sample were neither larger nor exhibited greater growth than their Scottish counterparts, and so these factors did not appear to be the cause of a greater need for capital.

The conditions imposed on the firm in return for finance are of added interest in the light of the identified difference in predominant sources in the two survey regions. Eighteen English firms (34 per cent) were required to provide security, either in the form of a personal guarantee or a first charge on the assets of the company. This compared with a similar requirement for only 12 firms (23 per cent) in the Scottish region. However, four other Scottish companies were asked to sign a default agreement in return for government funds.

These entrepreneurs promised to repay the full amount of the loan if the company ceased operating within a certain period of time, thus preventing them writing off the loss. Therefore, it would seem that conditions applied to public sector finance accessed by a number of Scottish companies did not essentially differ from the arrangements made between other survey firms and their bankers.

6.3.5 Largest source of external finance after start-up

Thirty nine of the survey firms indicated that their first injection of external finance after start-up was also their largest. The remaining nineteen respondents who had received another larger injection of external funds were asked the same questions as before; that is, the requirement for, and source of, the finance. This was an attempt to gauge whether, over time, they had made the most appropriate connection between the identified need for finance and the source of funds. Again, working capital emerged as the most common reason for seeking additional external finance, with eight companies (42 per cent) giving this response. Fifteen of the above companies (79 per cent) also used their first injection of external funds for this purpose.

Banks were the main source of the largest tranche of investment capital for 7 firms (78 per cent) based in the South East of England and also 7 companies (70 per cent) in Scotland, and they provided amounts in the range of £45,000 to £1.5 million. Extended bank overdraft facilities were utilised by five companies (26 per cent) to supplement working capital, and a further 4 firms (21 per cent) accessed bank loan finance to purchase plant and machinery. However,

five survey firms (26 per cent) used loans obtained from various sources to finance their working capital requirements. This compares with the first injection of external finance after start-up, where fourteen companies (24 per cent) used loans for working capital purposes. This indicates that awareness of more appropriate types of finance was still not evident in some survey firms. As before, banks required guarantees involving security and/or floating interest charges on the amount of the loan.

6.4 FINANCE AND GROWTH

Finance provided on favourable terms to small high technology firms with the potential to grow should encourage those companies to pursue a strategy of expansion. Given the discussion on investment amounts and associated conditions outlined above, this section considers some of the factors influencing the propensity of the small firm to grow. However, a measure of growth is only available for those firms founded prior to 1984, since this variable involves the calculation of the percentage difference in turnover per employee between 1984 and 1989.

Firstly, considering the effect the source of start-up finance has on the propensity to grow, Table 6.8 illustrates that 28 firms (67 per cent) which utilised mainly internal funds expanded over the five years. A marginally higher percentage of firms (9 in number, 75 per cent) founded with external capital also experienced a period of growth. Clearly the age of the firm should be taken into account,

although Table 6.9 does not indicate any significant pattern of results in percentage terms for firms in either the 'growth' or 'no growth' categories.

Table 6.8 Incidence of growth (1984-1989) by source of start-up capital

	Internal		External		Total	
	n	(%)	n	(%)	n	(%)
Growth	28	(66.7)	9	(75.0)	37	(68.5)
No growth	14	(33.3)	3	(25.0)	17	(31.5)
Total	42	(100.0)	12	(100.0)	54	(100.0)

Table 6.9 Incidence of growth by year of formation

	Year firm was founded									
	Pre 1960		1960-1969		1970-1979		1980-		Total	
	n	(%)	n	(%)	n	(%)	n	(%)	n	(%)
Growth	3	(100.0)	3	(50.0)	20	(76.9)	11	(57.9)	37	(68.5)
No growth	0	(0.0)	3	(50.0)	6	(23.1)	8	(42.1)	17	(31.5)
Total	3	(100.0)	6	(100.0)	26	(100.0)	19	(100.0)	54	(100.0)

Table 6.10 illustrates that a marginally greater percentage of firms (10 in number, 71 per cent) experienced growth with start-up capital in the range of £25,000 and over, than did companies established with amounts of up to £25,000 (25 in number, 66 per cent). Although internally funded start-ups tended to have access to generally smaller amounts of finance, this does not appear to have adversely affected relative growth levels. Indeed, the six largest respondent companies in terms of the number of people employed had been established with mainly internal capital, although their size can be attributed partly

to age since five were established before 1980. Two companies founded in the 1980s were obliged to provide personal guarantees in return for bank finance, and they were currently experiencing a period of no growth. One of these entrepreneurs had to offer his own house as security for a loan, resulting in a considerable amount of pressure being brought to bear during a downturn in business.

Table 6.10 Incidence of growth by amount of start-up capital

	Up to £25,000		Over £25,000		Total	
	n	(%)	n	(%)	n	(%)
Growth	25	(65.8)	10	(71.4)	35	(67.3)
No growth	13	(34.2)	4	(28.6)	17	(32.7)
Total	38	(100.0)	14	(100.0)	52	(100.0)

Thirteen firms (87 per cent) which had not sought post start-up external capital were growing, compared with 29 companies (63 per cent) which had taken up further external funds (see Table 6.11). This suggests that some companies were able to grow within their internally-generated means, whilst others were expanding at a rate which exceeded their current levels of profit generation. The remaining 17 firms adopting external finance exhibited no growth, and they may have been distress borrowing in an attempt to maintain a viable business, or investing heavily in the firm with a view to growing in future. Investigation of the particular sources of capital revealed that bank funding was most evident with firms in the growth category. What is not clear, however, is whether the banks tended to target growing firms, or whether bank finance facilitated growth in the survey firms. Table 6.12 illustrates that banks supplied the <u>initial</u> external funds after start-up for 20 expanding companies (69

per cent) and, similiarly, the largest injection of funds for 11 such firms (85 per cent). On the other hand, government funds were accessed after start-up by a greater percentage of firms experiencing no growth or a period of decline than by growing companies. Five declining or no growth firms (33 per cent) received government finance, compared with 7 growing companies (24 per cent). To a limited extent, this might indicate that public sector finance is finding its way to a number of firms which are not obvious candidates for more commercial sources of funds. However, only one survey firm used government funds for its largest injection of external capital, and this perhaps confirms the observation that the public sector is not a source of substantial amounts of investment capital, but may be useful as a source of 'top up' finance.

Table 6.11 Incidence of growth by whether adopted subsequent external investment

	Not adopted subsequent external finance		Adopted subsequent external finance		Total	
	n	(%)	n	(%)	n	(%)
Growth	13	(86.7)	29	(63.0)	42	(68.9)
No growth	2	(13.3)	17	(37.0)	19	(31.1)
Total	15	(100.0)	46	(100.0)	61	(100.0)

Table 6.12 Source of subsequent external finance by incidence of growth

	Initial injection after start-up						Largest injection after start-up					
	Growth		No growth		Total		Growth		No growth		Total	
	n	(%)	n	(%)	n	(%)	n	(%)	n	(%)	n	(%)
Banks	20	(69.0)	6	(40.0)	26	(59.1)	11	(84.6)	2	(50.0)	13	(76.5)
Govern-ment	7	(24.1)	5	(33.3)	12	(27.3)	1	(7.7)	0	(0.0)	1	(5.9)
Other	2	(6.9)	4	(26.7)	6	(13.6)	1	(7.7)	2	(50.0)	3	(17.6)
Total	29	(100.0)	15	(100.0)	44	(100.0)	13	(100.0)	4	(100.0)	17	(100.0)

In relating the growth of the firm to the conditions attached to the first injection of external finance after start-up, it emerged that only 5 firms (36 per cent) experiencing no growth were required to supply security, compared with 18 or 72 per cent of companies in an expansionary phase. This might be a reflection of the sums of capital involved. It also demonstrates that the necessity to provide guarantees did not deter a number of firms from pursuing a programme of growth. Thirteen firms (76 per cent) which had taken on larger amounts of external funding used this to finance further cashflow requirements, the purchase of fixed assets and the general growth of the firm. The remaining 4 firms (23 per cent) appeared in the no growth or decline category, where the major requirement for additional external capital was the need to purchase plant and machinery. It is not clear whether these firms were attempting to turnaround a currently negative position by further investment in the company, or whether their lack of growth was due to an overextension of resources in the first place.

6.5 SUMMARY AND CONCLUSION

In accordance with the findings of a number of other research studies, the main source of funds used to establish the majority of firms in this survey proved to be internal. Although external start-up capital has become more prevalent in recent years, with a number of financial sources being used by the survey firms including venture capital organisations. It is noticeable that externally-funded start-ups generally gained access to greater amounts of capital than companies using mainly internal finance. After the start-up process, there was little evidence of entrepreneurs choosing the most appropriate financial instruments for their requirements, either initially or over time. This could indicate that firms take advantage of whatever types of capital are most readily available at the time regardless of the source. Generally, banks were a major source of further finance to firms based in the South East of England and government sources of capital were more in evidence in the Scottish subsample, although the amounts obtained from the public sector were less than those from the private sector. Bank funding was also accessed by growth-oriented companies. However, there was no correlation between propensity to grow and location of the survey firms.

It is not clear whether it was the decision of entrepreneurs to use internal capital at start-up, or whether they were unable to raise external finance because of a lack of personally held collateral. However, the increase in the use of external start-up capital for companies founded in the last two decades might indicate an underlying convergence of the interests of investors and entrepreneurs. On the delivery side, the ready availability of investment finance in the

1980s and the resulting increase in competition between the financial institutions might have encouraged the relaxation of stringent requirements for collateral. On the acceptance side, the increasing level of knowledge on the part of the entrepreneur, in terms of the sources of external funds and the requirements of financiers, might have encouraged more applications to financial institutions. The generally greater amounts of start-up finance available from external sources could give the company considerable leeway to become well established before looking for further funds, whereas those firms using limited internal capital may have to get involved in the search for external capital almost immediately after starting the business. This would help to explain the finding that more firms founded with internal funds elected to approach financial institutions for further funding at a later stage.

The incidence of firms utilising overdraft facilities to purchase fixed assets and bank loans to finance working capital requirements might indicate that firms simply make use of the first form of finance they are able to obtain. However, this is obviously not in the interests of either the entrepreneur or the financier, since with more appropriate funding there will be less likelihood of the firm defaulting on any agreements underpinning the transaction. Clearly, companies should be encouraged to seek <u>current</u> information on available alternative sources and types of finance, and financial institutions should facilitate the search for the time-constrained small firm. Indeed, the onus may lie with the providers of finance since they are experienced in the provision of funds to industrial customers.

The conditions attached to the receipt of external finance in both survey regions were similar in nature, despite the prevalence of bank funding in the English subsample and government finance in generally smaller amounts in Scotland. This might suggest that, in the absence of government finance, firms located in Scotland could access greater amounts of capital from banks without more extreme conditions being attached to the investment. Although there was evidence to indicate that government funding was available to firms which had no alternative source of finance, public sector funds did not appear to fulfil within the firm an essentially different role from that of the banks.

Finally, the results did not provide any evidence that firms making extensive use of external sources of start-up finance experienced growth when internally funded establishments showed no growth. Nor was there any indication that security requirements associated with external finance deterred firms from pursuing a strategy of growth. However, that is not to say that greater growth might be achieved by externally funded firms save for the guarantees required by the financier. The conditions attached to the extension of finance might compel entrepreneurs to be over cautious and not pursue a vigorous growth strategy, thereby over-ensuring that the business remains solvent and that control by the founder is maintained.

Chapter 7

THE DISTRIBUTION AND IMPACT OF VENTURE CAPITAL FINANCE ON SURVEY FIRMS

7.1 INTRODUCTION

7.1.1 Venture capital and high technology manufacturing firms

Venture capital has been cited as a major determinant, and venture capital organisations major beneficiaries, of the phenomenal growth of new high technology firms in the Silicon Valley region of California (Hambrecht, 1984). Although venture capital funding comprises a relatively small amount of total funds available to new and existing enterprises in the United States, it is strongly associated with a number of rapidly growing companies (McMurtry, 1986). In light of the this evidence, this chapter investigates whether the existence of venture capital in the United Kingdom has produced an impact on the growth of small high technology manufacturing firms in the South East of England and Scotland.

Previous research on companies from different industrial sectors in the United Kingdom which used venture capital funds showed that firms experienced accelerated growth in terms of turnover, profit, employee numbers and exports in the years just prior to flotation (BVCA,

1987b). Companies with a specific technological focus exhibited higher rates of growth in profits and research and development (R&D) expenditure than in turnover (BVCA, 1987b). Perhaps this is an indication that these companies achieved R&D investment independence by dint of retained profits. This is encouraging given that many early stage technology-based companies experience difficulty in raising finance for R&D (Cumming, 1983; Oakey et al., 1990). Major losses are often incurred in product development stages where R&D expenditure is high (Grieve Smith and Fleck, 1987; Archer, 1989) and private sector investment sources are often unable to sustain such losses for indeterminate periods of time (Beevor, 1981). Traditional venture capital investors relieve this problem by taking an equity stake in the business in return for investment funds. They are prepared to forego short term income associated with interest payments on loans, in order to benefit from potentially higher returns when selling the shareholding in the longer term (Hall, 1987). Venture capital funding appears an appropriate way to finance the innovation process in small high technology manufacturing firms.

7.1.2 Industries attractive to venture capitalists

The increasing presence of venture capital in the financial marketplace (Stoy Hayward, 1989) and the growing importance attached to new technology-based enterprises (Oakey et al., 1988) inevitably led to the view that, taken either independently or in combination, they are important vehicles for revitalising Western developed economies (New Scientist, 1987). According to Dr Franklin, managing director of the United States banking company the Boston Capital Group, "it's well known that if you put knowledgeable capital in close proximity with new technology you are bound to get companies springing

up," (Anderson, 1988, p16). This view is confirmed by Chapman (1986) who states that "it is acknowledged that the greatest risks and perhaps the greatest potential rewards are associated with start-up finance and with science-based ventures where the accent is on exploiting unproven technology," (Chapman, 1986, p1). Perhaps in recognition of this, the electronics and computer-related sectors were popular investment targets for venture capital organisations between 1981 and 1985 (BVCA, 1987b).

Recently, however, the electronics industry has fallen from favour and more popular sectors include consumer-related industries, financial services, industrial products, computer-related businesses, construction and transportation (BVCA, 1988). A representative of Murray Johnstone Limited, the Glasgow-based venture capital fund, confirmed in a recent personal interview that venture capital providers have been flooding out of high technology ventures, suffering major losses in the process. As explained in Chapter 4, there were a large number of investments made in high technology sectors in the late 1970s and early 1980s by the burgeoning United Kingdom venture capital industry, perhaps echoing the past investment behaviour of venture capital organisations in the United States. However, according to a representative of Prelude Technology Investments, a Cambridge-based venture capital fund, "quite a lot of investments were made in the early 1980s by funds run by non-technologists" (interview evidence). These investments coincided with a period when small high technology firms began to experience intense competition from larger companies in the same industry (Andrews, 1988) and, as a result, there was a downturn in their performance. In reaction to this decline, a number of venture capital providers re-

focused their efforts in the late 1980s on less high technology-based industries and later stage investments (Chapman, 1986; BVCA, 1987b; BVCA, 1988). Indeed, Murray Johnstone Ltd are moving away from investing in early-stage technology as the following interview evidence indicates; "development capital and management buy-outs/-ins have met our target, technology has not. If we can't make money in this sector, we won't raise money". An attempt will be made to determine whether this trend in the supply of venture capital is evident amongst the small high technology manufacturing firms in this survey, especially given recent observations that the British electronics industry offered plenty of potential (Smitham, 1987) and that science-based ventures received sufficient venture capital support (Chapman, 1986).

7.1.3 Location of venture capital sources

Chapter 4 illustrated that the United Kingdom venture capital industry is strongly regional in nature, both in terms of location of venture capital organisations and investments. This contrasts with the findings of Kozmetsky et al. (1985) regarding the United States where, although "... venture capital funds are committed to major financial centers, venture capitalists endeavor to distribute their attention geographically," (p35) although this is less noticeable with dedicated high technology venture capital funds (Bullock, 1983). However, Florida and Kenney (1987) found that the concentration of investors in general, and venture capitalists in particular, in California, New York and New England facilitated the exchange of information, the syndication of investments and the mobilisation of resources over short periods of time. Similarly, Bale (1976) observed that the availability of finance in the United Kingdom was "... far from

ubiquitous, and for small firms the availability of local pools of financial capital may be critical," (p32). The emphasis on the localised nature of the provision of finance is important, not only for the above reasons of availability, but also because of the advantages accruing to an investment from local knowledge and expertise, commitment and convenience (Bain and Reid, 1984).

A number of previous studies have pointed to the success that Scotland has experienced in attracting venture capital investment (Chapman, 1986; BVCA, 1987b; Mason, 1987) although it is not clear whether this finance is sourced from Scottish venture capital organisations. Nevertheless, the amount invested in Scotland only comprises a fraction of the volume of funds available to firms in the South East of England (BVCA, 1988). The selection of study firms in Scotland and the South East of England is designed to test for regional differences in the supply of venture capital funds, since any spatial clustering of venture capital provision in the South East will have significant implications for industrial development in other areas.

7.2 DISTRIBUTION OF VENTURE CAPITAL WITHIN SURVEY FIRMS

Chapter 5 explained how the stratified sample of study firms was drawn from the sampling frame to consist of almost equal numbers of companies in three venture capital categories: firms which have received venture capital funds (RVCs); firms which have had contact with venture capital organisations but have not taken up the finance (NVCs); and companies which have had no contact with venture capital

institutions (NOCs). The following section proposes to analyse the general characteristics of the small high technology manufacturing firms in this survey with regard to their venture capital status.

7.2.1 Incidence of venture capital funding

In terms of the age of the firm, Table 7.1 illustrates that 22 firms (44 per cent) founded prior to 1980 had not received venture capital (NVC), either having refused or been refused such finance. This compares with a lesser 8 firms (24 per cent) established in recent years. A similar pattern emerges for the survey firms in the 'no contact' (NOC) category, however, the opposite trend is apparent when firms have received venture capital funding (RVC). Eighteen firms (55 per cent) founded in the 1980s had received venture capital funds, compared with only thirteen of the older companies (26 per cent). Table 7.1 indicates a significant difference at the value of $p=0.029$ following a chi-square test. Further investigation revealed that only seven of the 31 companies listed as RVCs (23 per cent) had actually used venture capital to finance the establishment of the firm. Since venture capital is a relatively recent source of external investment finance in the United Kingdom, it was expected that its adoption would be skewed towards the latter part of the last ten to fifteen years. This time scale corresponds with the increase in both the number of venture capital organisations and the amount of funds available. Nonetheless, Table 7.1 is concerned with the <u>founding date</u> of the <u>survey firms</u>, and this implies that either venture capital providers are attracted to younger firms, or that recently formed enterprises are more inclined to apply for and receive venture capital funding.

Table 7.1 Incidence of venture capital funding by year of formation

	Year firm was founded					
	Prior to 1980		1980 onwards		Total	
	n	(%)	n	(%)	n	(%)
Received venture capital (RVC)	13	(26.0)	18	(54.5)	31	(37.3)
Not received venture capital (NVC)	22	(44.0)	8	(24.2)	30	(36.1)
No contact with venture capitalists (NOC)	15	(30.0)	7	(21.2)	22	(26.5)
Total	50	(100.0)	33	(100.0)	83	(100.0)

Chi-square (2 d.f.) = 7.063 $p = 0.029$

Firms which had been in contact with venture capital organisations, that is RVC and NVC companies, were also asked whether they had been refused venture capital funds at any stage. A chi-square result significant at the $p=0.039$ level in Table 7.2 revealed that older companies were less likely to have been refused than firms established within the last decade. The majority of firms founded in 1980 or later (13 in number or 54 per cent) had been turned down for venture capital finance, compared with 7 companies (26 per cent) established prior to that date. It should be pointed out that this table is concerned with the specific instance where venture capital providers have refused to invest in survey firms, and any anomalies between Tables 7.2 and 7.1 are caused by firms declining the opportunity of venture capital funding. The higher refusal rate for firms established over the last decade would appear to contradict the conclusion drawn from Table 7.1. However, Table 7.3 offers a possible explanation for this apparent discrepancy. Most of the firms (18 in number or 62 per cent) which utilised venture capital funding had, at some previous stage, received some form of rejection from venture capital providers. Only 2 companies (9 per cent) had been

consistently refused venture capital funding. These results were significant at the $p=0.0001$ level following a chi-square test. Since the majority of firms which receive venture capital funds are occasionally refused this form of finance, this suggests that, in many cases, the firm itself initiates contact with venture capital organisations. This will be investigated in Chapter 8 in relation to the role the business plan plays in the acquisition of venture capital funds, and in Chapter 10 when considering the operations of the venture capital market. Summarising Tables 7.1 to 7.3, it appears that more survey firms established over the last ten years applied for venture capital funds and, in consequence, a higher number of such firms were exposed to being refused the finance.

Table 7.2 Whether refused venture capital finance by year of formation

	Year firm was founded					
	Prior to 1980		1980 onwards		Total	
	n	(%)	n	(%)	n	(%)
Refused venture capital	7	(25.9)	13	(54.2)	20	(39.2)
Not refused venture capital	20	(74.1)	11	(45.8)	31	(60.8)
Total	27	(100.0)	24	(100.0)	51	(100.0)

Chi-square (1 d.f.) = 4.251 $p = 0.039$

Table 7.3 Whether refused venture capital finance by incidence of venture capital funding

	Received venture capital (RVC)		Not received venture capital (NVC)		Total	
	n	(%)	n	(%)	n	(%)
Refused venture capital	18	(62.1)	2	(9.1)	20	(39.2)
Not refused venture capital	11	(37.9)	20	(90.9)	31	(60.8)
Total	29	(100.0)	22	(100.0)	51	(100.0)

Chi-square (1 d.f.) = 14.730 $p = 0.0001$

7.2.2 Location

This subsection considers whether the location of the survey firms has an effect on their propensity to obtain funds from venture capital organisations. However, any regional difference in venture capital status would not be evident from the 83 personal interviewee firms due to the otherwise justified use of the stratified random sampling technique described in Chapter 5, since the survey companies were selected in equal numbers according to the two variables of location and venture capital status. However, the regional question can be approached from a different angle by considering the data obtained during the postal questionnaire phase of the research (see Chapter 5).

The following introductory table is the same as Table 5.10 contained in Chapter 5, with the exception that data are presented in a more aggregate form. Table 7.4 illustrates that just over half (81 companies, 53 per cent) of the 154 respondents to the postal questionnaire survey had some form of contact with venture capital organisations, that is RVC and NVC firms. It is also significant that 32 firms (68 per cent) located in Scotland had dealings with providers of venture capital finance, compared with 49 (46 per cent) of South

Eastern companies (chi-square test significant at the p=0.013 level). Interestingly, 16 firms (34 per cent) located in Scotland, and 17 companies (a much smaller 16 per cent) based in the South East of England, received venture capital funds. This result is surprising given the hypothesis that the concentration of venture capital organisations and investments in the South East will have a deleterious effect on firms located in peripheral areas. However, it should be remembered that the South East comprised a larger population of electronics firms, and there were also a number of firms about which there was no information because they did not respond to the initial postal survey. Also, given the recent emergence of venture capital firms in the more peripheral regions, it might have been expected that Scotland would benefit from an appreciable provision of venture capital finance. It was not anticipated, however, that the outcome would so strikingly imply that Scottish firms benefited proportionately more from the supply of venture capital funds in comparison to companies located in the South East of England.

Table 7.4 Incidence of venture capital funding by location of postal survey firm

	South East		Scotland		Total	
	n	(%)	n	(%)	n	(%)
Received venture capital (RVC)	17	(15.9)	16	(34.0)	33	(21.4)
Not received venture capital (NVC)	32	(29.9)	16	(34.0)	48	(31.2)
No contact with venture capitalists (NOC)	58	(54.2)	15	(31.9)	73	(47.4)
Total	107	(100.0)	47	(100.0)	154	(100.0)

Chi-square (2 d.f.) = 8.625 p = 0.013

With regard to the location of the venture capital organisations in relation to the personal interview survey firms, Table 7.5 indicates that 9 Scottish firms (32 per cent) had been in communication with venture capital providers in the South East. On the other hand, no English respondent companies had talked with Scottish-based venture capital funds. As might be expected, this table is significant at the chi-square test level of $p=0.00001$. Thus, there is the implication that Scottish firms benefit not only from their association with indigenous financial organisations, but also from contact with a significant minority of South Eastern venture capital providers.

Table 7.5 Location of venture capital provider by location of interview firms in contact with these financiers

	Survey firm location					
	South East		Scotland		Total	
	n	(%)	n	(%)	n	(%)
South East	30	(100.0)	9	(32.1)	39	(67.2)
Scotland	0	(0.0)	19	(67.9)	19	(32.8)
	30	(100.0)	28	(100.0)	58	(100.0)

Chi-square (1 d.f.) = 30.275 $p = 0.00001$

Table 7.6 expands on the information contained in Table 7.5, and illustrates that 4 companies (27 per cent) receiving venture capital in Scotland obtained this finance from South Eastern-based venture capital organisations. All of these firms fell into a higher technology categorisation (see Subsection 7.3.2). Since it will be established in the following chapter that survey firms mostly initiated contact with venture capital providers, it may be that Scottish firms requiring investment funds for technologically

sophisticated R&D work chose to approach specialist financiers who were more likely to be found in number in the South East of England. Interestingly, this evidence contradicts the often stated requirement of venture capital organisations that investments should be local in nature in order to facilitate the monitoring process.

Table 7.6 Location of venture capital provider by location of interview firms receiving venture capital funds

	RVC survey firm location					
	South East		Scotland		Total	
	n	(%)	n	(%)	n	(%)
South East	15	(100.0)	4	(26.7)	19	(63.3)
Scotland	0	(0.0)	11	(73.3)	11	(36.7)
	15	(100.0)	15	(100.0)	30	(100.0)

Chi-square (1 d.f.) = 17.368 p = 0.00003

7.3 IMPACT OF VENTURE CAPITAL ON SURVEY FIRMS

7.3.1 Performance of survey firms

Having survived the trauma of start-up and the often precarious first few years of operation, it is reasonable to assume that older firms will be experiencing higher levels of turnover, profit and employment than newer firms in the same industry. This pattern emerges in Table 7.7, where the three individually significant crosstabulations of turnover, profit and number of employees by year of formation have been summarised. The majority of firms (33 in number, 81 per cent) which experienced turnover levels in the range of £500,000 and over had been founded prior to 1980. Similarly, the greater number of

firms (43 or 71 per cent) in the older age category were achieving profit levels in excess of £100,000 . This compares with a much reduced number of firms founded within the last ten years achieving high turnover and profit levels; eight firms (20 per cent) had a turnover figure of more than £500,000 and 18 firms (30 per cent) had a profit of more than £100,000.

Table 7.7 Turnover, profit and employee levels by year of formation

	Year firm was founded		
	Prior to 1980	1980 onwards	Significance level
Turnover (£0.5M+)	HIGH	LOW	Chi-square
No. of firms	33	8	$p = 0.0002$
% of firms	80.5%	19.5%	
Profit (£100K+)	HIGH	LOW	Chi-square
No. of firms	43	18	$p = 0.002$
% of firms	70.5%	29.5%	
Employees (51+)	HIGH	LOW	Chi-square
No. of firms	22	3	$p = 0.0007$
(% of firms)	88%	12%	

Caution is necessary when interpreting the results in the last part of Table 7.7, where a significant 22 firms (88 per cent) which had been established prior to the 1980s employed over fifty employees. A very small number of younger companies (3 or 12 per cent) fell into the 51 employees and over category. The problem of interpretation centres around the difficulty experienced in defining the precise size of a small firm (see Chapter 5, Subsection 5.3.2). A high level of turnover may be attained with a relatively low number of employees in new technology-based industries due to the high value added per worker, and the tendency to sub-contract work out. Therefore,

employment could be substantially lower per unit of output than in the more traditional manufacturing sectors. From a public policy viewpoint, however, it is important to encourage employment generating firms, and there is some evidence from Table 7.7 that small high technology firms have employment creation potential over time.

Summarising these results together with the evidence presented in Subsection 7.2.1, younger firms experiencing low levels of turnover, perhaps operating at a loss and employing fewer than 25 employees were likely to have applied for venture capital finance. This conforms to the ideal of the venture capital providers of nurturing currently low profile small firms through their formative years, until they are attractive profitable companies ready to be floated on the public markets. In order to fulfil this ideal, the firm should progress from its low turnover/negative profit position once it has adopted venture capital funds. Consequently, the following subsection investigates propensity to grow, and this is allied to the degree of technological sophistication within the company.

7.3.2 Venture capital as a source of growth finance

At this stage it was considered useful to create a new variable for analysis in this and subsequent chapters. The earlier literature review illustrated that venture capital funds were synonymous with technology-based companies in the United States since high technology firms involved in leading-edge research attracted the most interest from venture capitalists. In order to obtain some measure of whether venture capital finance in this country gravitated towards particular investment opportunities, the types of technology in which the survey firms were involved were subdivided by degree of technical

sophistication. Working on the principle that the higher the R&D spend and the larger the number of R&D employees, the greater the level of technical commitment, the input measure of R&D was considered a reasonable approximation to the technological sophistication of the firm. The percentage change in R&D expenditure and R&D employment over the five years prior to the study were also included in the calculation, thus taking into account the changing emphasis placed on R&D endeavours. Therefore, the variable created to distinguish between the differing levels of technological sophistication within the survey firms consisted of a combination of current and historical R&D expenditure and R&D staffing levels. Appendix 10 details the exact method by which the technological sophistication definition was derived. Firms scoring high on this rating scale were termed 'high technology,' and 'low technology' companies comprised the lower rated group.

Table 7.8 cross-tabulates technological sophistication against the percentage change in the number of employees between 1984 and 1989. Significantly, firms which exhibited no growth or a decline in employment levels over the five year period tended to be in the low technology category (chi-square test significant at $p=0.016$ level). Eleven low technology firms (37 per cent) had either not recruited employees or had shed labour. This compares with only 5 firms (13 per cent) in the high technology category which were not growing in terms of employees. On the other hand, 24 high technology companies (63 per cent) had increased their workforce by over 50 per cent, compared with a lesser 9 firms (30 per cent) in the low technology category. The age of the firm should be taken into account when interpreting these figures, and Table 7.9 illustrates that 22 companies (67 per cent)

founded over the last decade fell into the high technology category, compared with 21 older companies (a lesser 42 per cent). This table is significant at the p=0.028 level following a chi-square test, demonstrating that the younger firms in this sample are more technologically sophisticated, according to the measurement employed, and exhibit reasonable growth in terms of employee numbers. The following paragraphs investigate other growth variables before drawing an overall conclusion.

Table 7.8 Employee growth by technological sophistication

	High technology		Low technology		Total	
	n	(%)	n	(%)	n	(%)
Decline - 0%	5	(13.2)	11	(36.7)	16	(23.5)
1 - 50%	9	(23.7)	10	(33.3)	19	(27.9)
51 - 100%	24	(63.2)	9	(30.0)	33	(48.5)
Total	38	(100.0)	30	(100.0)	68	(100.0)

Chi-square (2 d.f.) = 8.294 p = 0.016

Table 7.9 Technological sophistication by year of formation

	Year firm was founded					
	Prior to 1980		1980 onwards		Total	
	n	(%)	n	(%)	n	(%)
High technology	21	(42.0)	22	(66.7)	43	(51.8)
Low technology	29	(58.0)	11	(33.3)	40	(48.2)
Total	50	(100.0)	33	(100.0)	83	(100.0)

Chi-square (1 d.f.) = 4.845 p = 0.028

The study by the BVCA (1987b) used turnover, profit and export figures as well as employment levels to arrive at some measure of growth. The application of the first of these criteria to the firms in this survey is illustrated in Table 7.10. Although not statistically significant, 24 firms (69 per cent) in the high technology category exhibited a 51-100 per cent increase in the level of turnover, compared with only 12 low technology firms (46 per cent). The variables calculated from the percentage change in profit and export levels between 1984 and 1989 did not display a similar pattern to growth in turnover and employee levels. However, Table 7.11 does indicate that firms which exhibited higher levels of exports in 1989 tended to fall into the technologically more sophisticated category. This table marginally fails to be significant at the $p=0.007$ level because it does not meet the requirement that less than 20 per cent of the cells have an expected frequency of less than five, the level being 33 per cent. Nevertheless, it is still noteworthy that only one high technology firm (2 per cent) had not sold any of its products abroad in 1989, compared with 8 (21 per cent) of the companies in the lower technology category. Similarly, the strongest current levels of exports were displayed by 16 high technology firms (37 per cent) and only 6 (15 per cent) low technology respondent companies.

Table 7.10 Turnover growth by technological sophistication

	High technology		Low technology		Total	
	n	(%)	n	(%)	n	(%)
Negative - 0%	3	(8.6)	5	(19.2)	8	(13.1)
1 - 50%	8	(22.9)	9	(34.6)	17	(27.9)
51 - 100%	24	(68.6)	12	(46.2)	36	(59.0)
Total	35	(100.0)	26	(100.0)	61	(100.0)

Table 7.11 Percentage of exports in 1989 by technological sophistication

	High technology		Low technology		Total	
	n	(%)	n	(%)	n	(%)
0%	1	(2.3)	8	(20.5)	9	(11.0)
1 - 50%	26	(60.5)	25	(64.1)	51	(62.2)
51 - 100%	16	(37.2)	6	(15.4)	22	(26.8)
Total	43	(100.0)	39	(100.0)	82	(100.0)

It appears that high technology firms, generally demonstrating a stronger commitment to R&D in terms of R&D expenditure and dedicated R&D staff, reaped the rewards of this investment with higher employment figures and increased turnover over time, and a generally greater level of exports. Since it has also been shown that the higher technology firms were mostly founded over the last decade, these firms may have a greater scope for growth in terms of employment and/or turnover when compared with their older counterparts. Moreover, given the observation that the recipients of venture capital funds tend to be younger firms (see Table 7.1) it would be expected that these companies would also have a high technology orientation. Consequently, the relationship between technological sophistication and venture capital status was investigated in order to determine whether growth-oriented companies were more likely to have adopted venture capital funds. Table 7.12 illustrates that 20 companies (47 per cent) in the high technology category had actually received venture capital finance, compared with 11 or 28 per cent of the low technology firms surveyed. The percentage difference between high and low technology firms was minimal in the category where firms had either been refused venture capital finance, or had decided not to

take it up (NVC). However, of those firms which had not had any contact with venture capital organisations (NOCs), 15 (38 per cent) were termed low technology, whilst 7 (16 per cent) fell into the high technology category. The chi-square test on the data presented in this table produced a result significant at the p=0.062 level. Since this level marginally exceeds the normally accepted p=0.05 level, Table 7.13 was produced to eliminate the effect that the NVC category (contact with venture capital organisations but no take up of funds) was having on Table 7.12. This re-organisation of the data is justified on the grounds that the NVC category is a grey grouping with many possible causes for the lack of venture capital take up, whereas the other two categories are more clear-cut. Table 7.13 demonstrates that the elimination of the NVC category results in a much increased significance level of p=0.019, indicating a strong relationship between the higher technology firms in this survey and the adoption of venture capital funds.

Table 7.12 Incidence of venture capital funding by technological sophistication

	High technology		Low technology		Total	
	n	(%)	n	(%)	n	(%)
Received venture capital (RVC)	20	(46.5)	11	(27.5)	31	(37.3)
Not received venture capital (NVC)	16	(37.2)	14	(35.0)	30	(36.1)
No contact with venture capitalists (NOC)	7	(16.3)	15	(37.5)	22	(26.5)
Total	43	(100.0)	40	(100.0)	83	(100.0)

Chi-square (2 d.f.) = 5.554 p = 0.062

Table 7.13 Incidence of venture capital funding (reduced categories) by technological sophistication

	High technology		Low technology		Total	
	n	(%)	n	(%)	n	(%)
Received venture capital (RVC)	20	(74.1)	11	(42.3)	31	(58.5)
No contact with venture capitalists (NOC)	7	(25.9)	15	(57.7)	22	(41.5)
Total	27	(100.0)	26	(100.0)	53	(100.0)

Chi-square (1 d.f.) = 5.505 $p = 0.019$

Overall, 36 or 84 per cent of the higher technology firms and 25 or 63 per cent of the lower technology companies had some form of contact with venture capitalists. This might indicate that United Kingdom venture capital organisations have a strong technology-based investment orientation and seek out such investment opportunities. However, given the evidence of Chapter 4, it would seem more likely that a high research and development commitment compels small high technology firms to apply for venture capital funds (see Chapter 10).

7.4 SUMMARY AND CONCLUSION

Despite the fact that older firms displayed a higher level of turnover, profit and employment, companies of ten years old or less were more likely to have received venture capital funding. However, younger firms did not automatically received this finance. Rather, it was common for eventual recipients to have been refused venture capital funds prior to a successful application. These younger firms also displayed a greater propensity to be 'high technology' as

measured by R&D inputs, and exhibited a higher rate of turnover and employee growth and a stronger export orientation than their older non-adopting counterparts. It was also interesting to note that a number of Scottish firms sought and received venture capital finance from venture capital organisations based in the South East of England. However, regardless of whether the companies were located in Scotland or the South East of England, high or low technology, young or old and/or high or low growth oriented, the majority demonstrated a requirement for investment funds by establishing contact with venture capital providers.

In the past, venture capital organisations have chosen to invest in particular industrial sectors in the belief that one successful investment bodes well for the prospects of other firms in the same industry. These financiers tended to adopt a 'herding instinct' when compiling their investment portfolios whereby, if one venture capital organisation demonstrated a good return on investments in a particular sector, then other venture capital providers would target firms in the same industry. This 'herding' together can work to the detriment of firms with good growth potential if other previous investments in that general sector have failed to show a satisfactory return. Understandably, having had their fingers burnt once, venture capital firms would avoid investing in similar situations in future and look for attractive alternative opportunities. The introduction to this chapter indicated that venture capital organisations are at present withdrawing from high technology investments, although this trend may not be apparent from the study since it is not longitudinal in nature. However, there would still appear to be venture capital organisations prepared to invest in firms in high technology sectors which

demonstrate the ability to grow. The 'growth potential' of a firm is important to venture capital providers who make investment decisions based not on high profit or turnover levels, but on firms showing future potential even with currently negative performance figures. The successful applicants are then able to grow either at their 'natural' rate as a result of receiving the venture capital funding, or they are required to become growth oriented in order to realise the best possible return for the financier. The latter statement is more likely given the evidence in Chapter 4 of the short-term orientation of venture capital organisations and their financial backers.

In addition, it is extremely interesting to note that the hypothesised disparity in the distribution of venture capital exists within the target sector, not in terms of a disproportionate number of firms in the South East attracting such finance, but in terms of venture capital providers from both regions investing in Scottish firms. This indicates that Southern-based venture capital organisations are prepared to invest at some distance, perhaps because they perceive these projects to be exceptional, especially since a commonly expressed complaint concerns the dearth of suitable investment opportunities. However, investing on a remote basis implies that contact between the investor and investee is not 'hands-on.' This will be investigated in detail in relation to the firms in this survey in Chapter 10.

The regional result could have been a precursor to the recent development of regionally based venture capital funds. Furthermore, the involvement of venture capital organisations with remotely based firms could lead to syndicated deals with local venture capital

providers who, in turn, might be a source of further syndicated investment opportunities. In this way, South Eastern venture capital organisations are able to take advantage of the demand for venture capital funds in the regions without having to bear the costs of establishing offices outside the London area. Notwithstanding the previous comments, the strong significance level associated with Table 7.6, which investigated the location of venture capital investors by the location of recipient firms, suggests that there is still a certain amount of investment parochialism associated with the distribution of venture capital funding in the United Kingdom.

Chapter 8

BUSINESS PLANS; THEIR ROLE IN THE ACQUISITION OF VENTURE CAPITAL FINANCE

8.1 INTRODUCTION

8.1.1 Formulation of business plans

The business plan of the potential investee firm may prove to be the "... principal tool in raising capital from the venture capital investor," (Timmons et al., 1977, p418). However, most venture capital organisations receive many more plans than they have time to consider and, as a result, they tend to pay more attention to those plans which have been referred by a source respected by the financier (Deloitte, Haskins & Sells, 1983). Therefore, it may be important for applicant companies to identify intermediaries who are instrumental in fostering deals between investee firms and venture capital organisations. However, this application procedure only facilitates access to venture capital providers. The entrepreneur should attempt to prepare a document which will attract the interest of the venture capital provider and the intermediary if one is used. If this third party is an accountant or management consultant, he may even be involved in the formulation of the plan, offering assistance with

layout, financial projections and other such details. This professional help should be kept to a minimum in order to "... capture the spontaneity and enthusiasm of management which in many cases will be critical to the success of the proposal," (Arthur Anderson, 1987, p6). This means that a considerable amount of management time will be taken up in writing a plan or revising an existing document. However, its use can extend beyond the initial aim of attracting investment finance, becoming a valuable reference document for planning and monitoring the long term business performance of the company (Timmons, 1981). For the purposes of this study, the focus will be on the ability of the plan to attract investment backing.

8.1.2 Business plan components

Typically, the venture capital organisation will reject 85 per cent of the investment opportunities at an early stage, 15 per cent will receive serious consideration, and only 5 per cent will result in negotiations between the potential investor and investee (Arthur Anderson, 1987). These figures were confirmed by a representative of Baillie Gifford and Company in Edinburgh; "we get 100 plans a year. About twelve are looked at seriously, two or three get finance" (interview evidence). Venture capital organisations undertake a process of 'due diligence' once they have decided to consider further promising business proposals (Pratt, 1983c). This primarily entails substantiating three vital elements of the business plan, namely the experience of the management team, the market potential and the technical aspects of the product(s). These components are elaborated upon below.

MANAGEMENT

The management team element is often cited as the most critical factor in the appraisal process (Waite, 1983). Frequently, venture capital providers maintain that they "... invest in people not projects," (Gopalan, 1986, p17). The strength of commitment to funding ventures with competent management is obvious from the following statements: "... investors would rather back an 'A' team in a 'B' market than the reverse," (Bruno et al., 1985, p13); and, "we're more inclined to back excellent management in a less exciting area" (interview evidence with a representative of Baillie Gifford and Company). Kryzanowski and Giraldeau (1977) and Bruno et al. (1985) have stated that the range in expertise of the management team may reduce the risk associated with the investment. This might explain why MacMillan et al. (1985) discovered that failure to obtain venture capital funds was often due to the inexperience of the entrepreneur. However, technically qualified people applying for venture capital finance in the United Kingdom tend to lack commercial market expertise (Stevens, 1981) and this must have a bearing on the success of their application.

MARKET

Notwithstanding the above comments, the proposed market for the product is another important consideration. Venture capital organisations look for the identification of current and future market requirements in the business plan, together with an assessment of how the company intends to address these in order to grow (Pratt, 1983c). Independent validation for market predictions and prospects is also considered important by the financiers (Watkins, 1978). A fundamental problem with many business plans is that they do not take sufficient

account of market potential, and this neglect is seen to indicate a lack of preparation for competition (Cohen and Faris, 1983). Such omissions are of added significance to technology-based proposals formulated, in most instances, by engineers lacking wider business expertise (Batchelor, 1988c). Competition is likely to be intense in high technology sectors, since existing potential competitor firms respond quickly to the introduction of new products as a consequence of the rapidly changing environment in which they operate (Cohen and Faris, 1983).

PRODUCT

Technical entrepreneurs are often accused of being blinded by the innovative nature of their products, whilst ignoring the critically important factor of profitability (Dolch, 1983). This has been advanced as one reason why high technology ventures in particular experience difficulty in attracting investment finance from external sources (Moseley, 1985). Although venture capital providers are looking for a product with unique or proprietary technological aspects (Patricof, 1983), it must to be able to achieve saleability according to the existing benefits and costs to the consumer (Pennington, 1982). In other words, the product should have some quality which no competitor can currently rival and, ideally, there should be demonstration of existing demand in the marketplace at an appropriate price to the consumer. A representative of Hambros Advanced Technology Trust in London indicated that he was looking for "companies with existing products which can be marketed" (interview evidence).

8.1.3 Problems associated with the appraisal process

The decision to invest in a particular venture is extremely judgemental and, as such, the process of appraisal is considered to be more of an art than a science (NEDC, 1986). Certain objective analysis techniques can be applied when assessing financial data. However, the quality of the business plan elements of management, market and product are mostly assessed on a subjective basis (Batchelor, 1988d). Venture capital funds place most emphasis on the experience and competence of the management team. Nonetheless, there are problems associated with this criterion; namely entrepreneurs starting out in business may not have had time to acquire management experience, and small established firms may not have developed a management team due to their size. Another issue concerns negative management experience. In the British case, if an entrepreneur has failed in a previous business venture, then he may find it particularly difficult to convince the financier of his competence. According to one prominent venture capital provider, "we would take previous business failure as proof that this is a man to avoid," (Batchelor, 1990c, p17). "There is a huge stigma attached to failure - everyone remembers it," (interview evidence with a representative of the Scottish Development Agency). This contradicts the view commonly held in the United States that "an entrepreneur's second venture profits from lessons learned from the first ...," (Larsen and Rogers, 1984, p54).

Management expertise might be of reduced significance in high technology ventures where entrepreneurs are initially protected from competition by the development of unique products or processes (Batchelor, 1988e). According to Bruno et al. (1985) a product used

to launch a new firm should be without equal, and yet "venture capitalists often shy away from investing in research or the development of altogether new technologies ...," preferring instead "... to invest in the application of existing technology to a new problem," (p13). Generally, venture capital organisations are more interested in high profile products (Johnston, 1983) in market sectors with which they are familiar (Bruno et al., 1985). The Cambridge-based venture capital organisation, Cambridge Capital Management Ltd, "... always go for companies with an established technology in an innovative application, then you only have to overcome management risk". However, the representative from Cambridge Capital Management acknowledged that "within high technology business, product generation is the lucrative end, not the use of it itself," (interview evidence).

Another problem associated with high technology entrepreneurs is that they do not always present their companies in an effective manner to the financiers (Hosking, 1988). Realising this, some entrepreneurs would welcome the opportunity to revise their business plans in the light of criticisms put forward by the venture capital organisations (Foss, 1985). However, it is likely that merging the aims of entrepreneurs and venture capital providers within business plans will prove difficult. Very often "... the view held by the entrepreneur (who is the user of venture capital) can differ quite dramatically from that held by the supplier of venture capital (the venture capital fund manager)," (Hodgson, 1984, p118).

8.2 APPLICATION FOR VENTURE CAPITAL FUNDS

From the above commentary it is clear that many entrepreneurs are faced with the prospect of proving that their business is not only worthy of investment by venture capital organisations, but also offers the potential for substantial financial returns. Subsequent sections of this chapter will investigate the survey firms in more detail with regard to whether they have received venture capital finance. However, there now follows a consideration of the nature of the contact with venture capital providers, both in personal terms and from the point of view of the business plan. This precedes a more comprehensive discussion in Chapter 10 on the supply and demand aspects of the venture capital marketplace.

8.2.1 Contacting venture capital providers

A significant majority of firms which had contact with venture capital organisations also possessed business plans. This is not surprising since initial investigations by financiers are based around this document. Table 8.1 shows that 43 firms or 86 per cent with business plans had interacted with venture capital providers, whereas the corresponding figure for firms without formal business plans was a lower 18 companies or 55 per cent (chi-square test significant at the level of $p=0.001$). However, given that much of the available literature advocates the formulation of a five year plan as essential to obtaining venture capital funding, it is interesting that nine of the 18 firms (50 per cent) felt able to make an application without such a document. Eight of these nine companies (89 per cent) decided to use intermediaries to initiate contact with venture capital providers, and it may be that the requirement to form a business plan

is bypassed when contact is made by way of a referral. However, only 3 of these companies were successful in obtaining venture capital funds in this manner.

Table 8.1 Contact with venture capital providers by whether firms have formal business plans

	Business plan		No business plan		Total	
	n	(%)	n	(%)	n	(%)
Contact with venture capitalists	43	(86.0)	18	(54.5)	61	(73.5)
No contact with venture capitalists	7	(14.0)	15	(45.5)	22	(26.5)
Total	50	(100.0)	33	(100.0)	83	(100.0)

Chi-square (1 d.f.) = 10.097 $p = 0.001$

The growth orientation of the firm may have an effect on the mode of the initial contact with the financier. According to Table 8.2, when venture capital organisations initiated the contact, they mostly chose to approach expanding companies directly. Fifteen growing firms (83 per cent) were approached directly by the financiers, whilst there was no difference between direct and indirect contact with declining or no growth companies. The opposite trend was evident in cases where the firm first established the relationship. The majority of declining or no growth firms (9 or 75 per cent) made use of an intermediary, whereas this mode of contact was not so evident amongst growing companies. In other words, direct contact generally was established by venture capital organisations when survey firms were growing, and indirect forms of contact were prevalent when stagnant or declining firms decided to apply for venture capital funds. The direct approach is understandable when financiers are attempting to alert certain

attractive firms to the potential of venture capital funding. On the other hand, less obviously attractive firms perhaps use intermediaries as sounding boards before establishing contact with venture capital providers since their businesses may not appear commercially attractive. Intermediaries may have advised the firms to look for more money, and offered their assistance in the process.

Table 8.2 Nature of contact with venture capital providers by who initiated contact and incidence of growth

	Venture capitalist initiated contact						Firm initiated contact					
	Positive growth		Negative growth		Total		Positive growth		Negative growth		Total	
	n	(%)	n	(%)	n	(%)	n	(%)	n	(%)	n	(%)
Direct	15	(83.3)	2	(50.0)	17	(77.3)	10	(50.0)	3	(25.0)	13	(40.6)
Inter-mediary	3	(16.7)	2	(50.0)	5	(22.7)	10	(50.0)	9	(75.0)	19	(59.4)
Total	18	(100.0)	4	(100.0)	22	(100.0)	20	(100.0)	12	(100.0)	32	(100.0)

The remaining sections of this chapter investigate the factors which lead to the actual supply of venture capital funds to firms after initial contact has been made.

8.2.2 Business plans

Table 8.3 illustrates that a significant 26 firms (84 per cent) which received venture capital funds also possessed business plans (chi-square test significant at the level of $p=0.0006$). Similarly, the majority of firms (17 or 57 per cent) in the 'established contact but not received venture capital' category (NVC) indicated that they had formulated a plan, whereas few companies which had not required venture capital finance (NOC) had such a document (7 firms or 14 per

cent). This would imply that the business plans of the survey firms had been devised largely to raise investment capital. Indeed, this was true for 21 firms or 81 per cent which received venture capital funds, whilst the majority of firms in both the NVC (11 in number or 65 per cent) and NOC (6 companies or 86 per cent) categories had formulated business plans as strategic planning tools or as information documents for their parent company. The majority of firms which formed their plans in order to raise money were successful in achieving this objective. Therefore, firms possessing business plans originally formulated for a purpose other than seeking funds might be advised to revise them when applying for external investment finance.

Table 8.3 Whether firms possess business plans by venture capital status

	Received venture capital (RVC)		Not received venture capital (NVC)		No contact (NOC)		Total	
	n	(%)	n	(%)	n	(%)	n	(%)
Business plan	26	(83.9)	17	(56.7)	7	(14.0)	50	(60.2)
No business plan	5	(16.1)	13	(43.3)	15	(68.2)	33	(39.8)
Total	31	(100.0)	30	(100.0)	22	(100.0)	83	(100.0)

Chi-square (2 d.f.) = 14.807 p = 0.0006

Further analysis was undertaken to discover whether particular types of firms tended to formulate plans. Specifically, the technological sophistication of the firms was crosstabulated against whether they possessed a formal business plan. Thirty two of the higher technology firms in this survey (74 per cent) had formulated a business plan, compared with only 18 (45 per cent) of the less technologically sophisticated companies (Table 8.4). This table proved significant following a chi-square test at the level of p=0.006. Perhaps the

higher technology firms were committed to generally higher levels of R&D expenditure and had to plan in order to apply for external funds to maintain expensive R&D efforts. However, just over half of the higher technology companies (18 in number or 56 per cent) had formed their plans in order to seek investment capital, and the same percentage of firms with business plans in the lower technology category (10 in number) cited the same reason. Therefore, there is no obvious difference in motives for formulating business proposals between the higher and lower technology firms in this survey, but there may be a difference in terms of the extent to which R&D funds are required.

Table 8.4 Whether firms posses business plans by technological sophistication

	High technology		Low technology		Total	
	n	(%)	n	(%)	n	(%)
Business plan	32	(74.4)	18	(45.0)	50	(60.2)
No business plan	11	(25.6)	22	(55.0)	33	(39.8)
Total	43	(100.0)	40	(100.0)	83	(100.0)

Chi-square (1 d.f.) = 7.488 p = 0.006

There was a significant tendency for younger rather than older firms to give the requirement for investment finance as the major incentive for writing business plans (Table 8.5). At the chi-square test significance level of p=0.042, 17 firms (71 per cent) founded during 1980 or later formulated plans with the specific intention of seeking investment funds, compared with a lesser 11 older companies (42 per cent). This result coincides with the greater tendency for younger firms to receive venture capital finance as outlined in Chapter 7. In

addition, there is a strong inclination for firms which were established with external funds to formulate business plans. A significant 15 firms or 79 per cent founded with external capital as a main source possessed a formal business plan, whereas 28 firms (a lesser 53 per cent) using internal start-up capital had written such a document (Table 8.6). This table is significant at the level of p=0.046 following a chi-square test. It is likely that firms established with external funds were obliged to write business plans in return for start-up funding.

Table 8.5 Purpose of the business plan by year of formation

	Prior to 1980		1980 onwards		Total	
	n	(%)	n	(%)	n	(%)
To raise money	11	(42.3)	17	(70.8)	28	(56.0)
Other	15	(57.7)	7	(29.2)	22	(44.0)
Total	26	(100.0)	24	(100.0)	50	(100.0)

Chi-square (1 d.f.) = 4.121 p = 0.042

Table 8.6 Whether firms possess business plans by main source of start-up finance

	Internal		External		Total	
	n	(%)	n	(%)	n	(%)
Business plan	28	(52.8)	15	(78.9)	43	(59.7)
No business plan	25	(47.2)	4	(21.1)	29	(40.3)
Total	53	(100.0)	19	(100.0)	72	(100.0)

Chi-square (1 d.f.) = 3.966 p = 0.046

This observation raised the question of whether business plans had been fundamentally redrafted at any stage. Interestingly, the majority of plans belonging to firms receiving venture capital funds had been altered in some way (16 firms or 62 per cent), whilst plans belonging to firms which had not received venture capital finance mostly remained unchanged. The respondents which had redrafted their plans were asked whether these alterations were made due to the failure of the original plan to attract venture capital funds. In only nine out of 24 cases (38 per cent) where business plans had been modified did the changes take place before approaching the next venture capital organisation. Significantly, more firms founded in the last decade were involved in the revision of their business plans (see Table 8.7). Fifteen firms (63 per cent) established from 1980 onwards changed their plans in some fundamental way, compared with only 9 companies (35 per cent) established prior to 1980 (chi-square test significant at the level of p=0.049). This could be a result of younger firms still being in their formative years and, as such, they have not settled on any particular long term strategy on which it might be possible to rely.

Table 8.7 Whether the plan was fundamentally redrafted by year of formation

	Prior to 1980		1980 onwards		Total	
	n	(%)	n	(%)	n	(%)
Redrafted	9	(34.6)	15	(62.5)	24	(48.0)
Not redrafted	17	(65.4)	9	(37.5)	26	(52.0)
Total	26	(100.0)	24	(100.0)	50	(100.0)

Chi-square (1 d.f.) = 3.888 p = 0.049

The respondents were also asked to indicate whether they had sought any professional help with the initial formulation of the plan or a subsequent redraft. Twenty five firms in both the received and not received venture capital finance categories (almost 58 per cent) had received professional help and advice with their plan in its initial stages. The type of professional help enlisted by the survey firms differed in that accountants were mostly employed by firms in the not received category (6 firms, 55 per cent incidence) and other professionals like management consultants and financiers were utilised by firms in receipt of venture capital funds (11 firms or 79 per cent). Linking this result to the motivation behind the business plan, accountants are useful when writing a strategic planning document, whilst advice from banks, venture capital organisations, consultants and government agents is effective when formulating plans in order to obtain venture capital funds.

A considerable amount of management time is taken up in preparing the business plan and the respondents were asked whether they believed that the document was of value. Overall, forty firms (80 per cent) found either the plan itself, or the exercise of writing the plan, useful to their business. There was a higher incidence of perceived usefulness amongst firms established prior to 1980. Twenty four older firms (92 per cent) found the plan valuable compared with 16 younger companies (67 per cent) and this might be a reflection of ability to achieve business plan objectives. For example, older companies may have settled into some form of strategy from which they are able to plan ahead on a stable basis, and they may be more able to achieve business plan targets due to consistent performance and greater experience. On the other hand, younger less experienced firms might

have to settle for a process of formulating and re-formulating plans in the light of ambitious targets and variable market conditions and results.

8.3 MAIN INGREDIENTS OF BUSINESS PLANS

There now follows an evaluation of the three business plan components highlighted by venture capital organisations as being of particular interest. Firstly, the qualifications and experience of the founders and management teams of the survey firms will be analysed to ascertain the degree to which this affects ability to attract venture capital funds. An investigation of the nature of the markets together with the attributes of the products will follow, and may help to explain any patterns with regard to the supply of venture capital funds.

8.3.1 Management

In order to determine whether academic achievement had any effect on the acquisition of venture capital, the respondents were asked to indicate whether the founders held any higher education qualifications of HND/HNC level or above when establishing the company. Twenty six companies (45 per cent) with qualified founders had received venture capital finance (see Table 8.8) and almost three quarters were in possession of an ordinary degree or higher qualification. This compares with only 4 founders (18 per cent) receiving venture capital funds when not in possession of higher education qualifications. However, a substantial minority of the qualified entrepreneurs (20 in number or 35 per cent) had not received venture capital funding and the majority of these held an ordinary degree or higher qualification

as above. The academic status of the founder appeared to have only a marginal effect on the distribution of venture capital funds. Indeed, it might be postulated that the qualifications of the founders are considered to be supplanted by the expertise they gain in business after leaving an academic environment.

Table 8.8 Incidence of venture capital funding by whether main founder had formal academic qualifications at time of formation

	Qualified		Not qualified		Total	
	n	(%)	n	(%)	n	(%)
Received venture capital (RVC)	26	(44.8)	4	(18.2)	30	(37.5)
Not received venture capital (NVC)	20	(34.5)	10	(45.5)	30	(37.5)
No contact with venture capitalists (NOC)	12	(20.7)	8	(36.4)	20	(25.0)
Total	58	(100.0)	22	(100.0)	80	(100.0)

The respondents were asked whether any members of the management team had management experience with other firms in the same industry prior to forming the current firm. Surprisingly, 13 management teams or 46 per cent with no prior management experience in a similar business had received venture capital finance (see Table 8.9). Eight companies (36 per cent) with one experienced manager and 10 firms (30 per cent) with two or more experienced personnel also received venture capital funding. However, 14 management teams (42 per cent) consisting of two or more managers with relevant industrial experience had not received finance after contact with venture capital providers. It is also interesting to note from Table 8.10 that a significant 10 firms (53 per cent) with no prior industrial management experience used external funds to establish the business (chi-square test significance level of $p=0.033$). This compares with 16 companies with no prior management

experience (30 per cent) established with internal capital. In the majority of cases banks emerged as the main external source of start-up funds.

Table 8.9 Incidence of venture capital funding by number of managers on management team with prior management experience in the industry

	0		1		2+		Total	
	n	(%)	n	(%)	n	(%)	n	(%)
Received venture capital (RVC)	13	(46.4)	8	(36.4)	10	(30.3)	31	(37.3)
Not received venture capital (NVC)	9	(32.1)	7	(31.8)	14	(42.4)	30	(36.1)
No contact with venture capitalists (NOC)	6	(21.4)	7	(31.8)	9	(27.3)	22	(26.5)
Total	28	(100.0)	22	(100.0)	33	(100.0)	83	(100.0)

Table 8.10 Number of managers on management team with prior management experience in the industry by main source of start-up finance

	Internal		External		Total	
	n	(%)	n	(%)	n	(%)
0	16	(30.2)	10	(52.6)	26	(36.1)
1	14	(26.4)	7	(36.8)	21	(29.2)
2+	23	(43.4)	2	(10.5)	25	(34.7)
Total	53	(100.0)	19	(100.0)	72	(100.0)

Chi-square (2 d.f.) = 6.824 $p = 0.033$

The lack of prior management experience does not appear to inhibit the ability of the firm to attract venture capital and other forms of external finance. However, it is not evident from this survey whether the people lacking management experience were academic in origin, as information on academic qualifications was sought only for the main

founder of the company. It is also not clear whether experienced founders and managers found themselves involved in the current business as a result of the failure of a previous venture. It might be the case that no previous business experience in the industry is preferable to having failed in the running of a similar company when seeking external investment finance.

8.3.2 Market

Only 18 of the survey firms (22 per cent) were involved in selling a percentage of their output to the final consumer market, the main emphasis being on industrial and government markets. Forty one firms (almost 50 per cent of the sample) sold their products to customers who were predominantly located abroad (see Table 8.11) and a strong export orientation was associated with receipt of venture capital funds. Twenty companies (49 per cent) selling mostly outwith the United Kingdom had obtained such finance, compared with only 11 firms (26 per cent) selling to United Kingdom customers. It is not clear whether firms with a strong current export orientation exported before receiving venture capital funding, or whether this money helped to establish an overseas customer base. However, the money was used to finance the marketing efforts of export oriented companies in only two instances from a total of 44 separate venture capital investments. It seems reasonable to postulate that venture capital organisations are interested in investment opportunities involving companies with a strong emphasis on exporting, since this means that the survey firms are not dependent upon the fortunes of one market, and demand abroad is a reflection of the strength of the product technology.

Table 8.11 Venture capital status by predominant customer location

	United Kingdom		Abroad		Total	
	n	(%)	n	(%)	n	(%)
Received venture capital (RVC)	11	(26.2)	20	(48.8)	31	(37.3)
Not received venture capital (NVC)	16	(38.1)	14	(34.1)	30	(36.1)
No contact with venture capitalists (NOC)	15	(35.7)	7	(17.1)	22	(26.5)
Total	42	(100.0)	41	(100.0)	83	(100.0)

The propensity to export depends upon the nature of the main product of the survey firm; that is, whether it is a direct imitation or improvement of a product already available on the market, or whether it is a totally new product. Table 8.12 indicates that a significant 9 firms or 90 per cent with imitation type products were mainly involved in exporting, compared with 11 companies (44 per cent) trading improved products and 21 firms (44 per cent) with a totally new product strategy (chi-square test significant at the level of $p=0.024$). These results may be partially explained by Table 8.13 which compares the main product attribute with the age of the company. Twenty two younger firms (67 per cent) were concerned with the manufacture of totally new products, compared with 26 firms (a lesser 52 per cent) founded prior to 1980. This table proved to be significant after a chi-square test at the level of $p=0.038$. It is likely that older firms will have developed clear marketing and product strategies for the domestic marketplace, enabling them to build on this and become established in export markets. On the other hand, younger firms dealing in totally new products may be tentatively 'piloting' them on the home market and gaining experience before progressing to the export stage. This would limit exposure to

risk in the short term. However, this strategy could alert competitors following imitation- or improvement-based product strategies to the existence of the new product, allowing them to develop copycat versions rapidly to sell to buyers in established export markets.

Table 8.12 Predominant customer location by nature of main product

	Imitation		Improvement		Totally new		Total	
	n	(%)	n	(%)	n	(%)	n	(%)
United Kingdom	1	(10.0)	14	(56.0)	27	(56.3)	42	(50.6)
Abroad	9	(90.0)	11	(44.0)	21	(43.8)	41	(49.4)
Total	10	(100.0)	25	(100.0)	48	(100.0)	83	(100.0)

Chi-square (2 d.f.) = 7.499 p = 0.024

Table 8.13 Nature of main product by year of formation

	Prior to 1980		1980 onwards		Total	
	n	(%)	n	(%)	n	(%)
Imitation	4	(8.0)	6	(18.2)	10	(12.0)
Improvement	20	(40.0)	5	(15.2)	25	(30.1)
Totally new	26	(52.0)	22	(66.7)	48	(57.8)
Total	50	(100.0)	33	(100.0)	83	(100.0)

Chi-square (2 d.f.) = 6.525 p = 0.038

8.3.3 Product

In keeping with the above commentary, 5 firms (50 per cent) with imitation-based products had received venture capital finance (see Table 8.14) and perhaps these funds were required to finance copycat development work and/or marketing efforts. Twenty companies (42 per cent) manufacturing totally new products also obtained venture capital

funds, and these could have been used to finance R&D work since innovative companies tend to be dependent upon their own expensive R&D efforts as opposed to technology licensing agreements. According to Table 8.15, a significant majority of firms which used only their own R&D facilities (40 in number or 56 per cent) developed more technologically complex products (chi-square test significant at the level of $p=0.045$). This compares with only 3 companies (25 per cent) producing high technology goods and utilising external sources of R&D. This would seem to echo the above findings that companies with new products are more inclined to spend investment funds on R&D efforts. Further justification for this conclusion is provided by Table 8.16, which is significant at the $p=0.033$ level following a chi-square test. The respondents were asked to indicate whether they had ever terminated significant R&D projects at a critical stage. Firms which either manufactured improvement type or totally new products registered a higher incidence of abandoned noteworthy product innovations (16 firms, 67 per cent and 40 firms, 85 per cent respectively) than producers of imitation goods (5 firms or 50 per cent). A number of these projects may not have lived up to the expectations of the firm if they had been carried through to completion, but they are a useful indication of the level of R&D and subsequent risk taking place in the more technically sophisticated firms.

Table 8.14 Incidence of venture capital funding by nature of main product

	Imitation		Improvement		Totally new		Total	
	n	(%)	n	(%)	n	(%)	n	(%)
Received venture capital (RVC)	5	(50.0)	6	(24.0)	20	(41.7)	31	(37.3)
Not received venture capital (NVC)	3	(30.0)	9	(36.0)	18	(37.5)	30	(36.1)
No contact with venture capitalists (NOC)	2	(20.0)	10	(40.0)	10	(20.8)	22	(26.5)
Total	10	(100.0)	25	(100.0)	48	(100.0)	83	(100.0)

Table 8.15 Technological sophistication by main source of R&D

	Totally self-sufficient		External/ combination		Total	
	n	(%)	n	(%)	n	(%)
High technology	40	(56.3)	3	(25.0)	43	(51.8)
Low technology	31	(43.7)	9	(75.0)	40	(48.2)
Total	71	(100.0)	12	(100.0)	83	(100.0)

Chi-square (1 d.f.) = 4.038 p = 0.045

Table 8.16 Incidence of abandoned innovation projects by nature of main product

	Imitation		Improvement		Totally new		Total	
	n	(%)	n	(%)	n	(%)	n	(%)
Abandoned project	5	(50.0)	16	(66.7)	40	(85.1)	61	(75.3)
Not abandoned project	5	(50.0)	8	(33.3)	7	(14.9)	20	(24.7)
Total	10	(100.0)	24	(100.0)	47	(100.0)	81	(100.0)

Chi-square (2 d.f.) = 6.835 p = 0.033

Thus, firms which are mainly concerned with the research and development of totally new products not only have to find the money to finance this process, but also have to be prepared to see funds absorbed by projects which may not come to fruition. The firm may end up without a viable product after months or years of expensive R&D. A similar situation confronts traditional venture capital providers when deciding whether to invest in firms whose manufacturing strategy consists of developing totally new products. The venture capital organisation may invest in an idea which fails to become a marketable product. The issue of risk management by the investor is important to the supply and demand relationship, and this will be discussed in greater detail in Chapter 10.

8.4 SUMMARY AND CONCLUSION

The majority of firms in contact with venture capital organisations had formulated business plans, although a number had decided to approach these financiers without such formal documents. These companies mostly established contact via intermediaries, and third parties proved useful when potential investee firms were not obviously attractive investment propositions. Generally, firms receiving venture capital funds conceived their business plans in order to raise investment finance. Other companies considered them an integral part of strategic planning. It emerged that young high technology firms had the greater propensity to write business plans, along with companies which had accessed external capital as a main start-up source. The qualifications and experience of the management team did not seem to have a bearing on ability to attract venture capital

funding. However, recipients exhibited a strong exporting orientation and a number of these companies tended to manufacture imitation-based products. These firms required investment capital for reasons other than R&D, in contrast to firms developing totally new products.

A number of declining or no growth firms requiring investment funds chose to approach venture capital providers by means of an intermediary. This enabled the firm to 'get a foot in the door' of the venture capital organisation where simply sending a business plan might have resulted in immediate and outright rejection. That is not to say, however, that the business plan is not an essential document when seeking venture capital funds. The plan should be formulated specifically to attract the interest of the venture capital organisation in order to have the best chance of success. However, an inordinate amount of management time can be taken up in this process. Although the plan acts as a useful screening device for the venture capital organisation, a firm is likely to become disenchanted by the application procedure if the plan is rejected 'at the first hurdle' after substantial work has been expended.

Analysis of the principal components of the business plan revealed that management with no previous experience in the industry are just as likely to receive venture capital funds as firms with experienced management teams. This contradicts a stated aim of many venture capital organisations to target firms with relevant management expertise. It also raises the question as to whether the firm is likely to obtain venture capital funds if members of the management team have been involved in prior business opportunities which have

failed. Venture capital organisations in the United States acknowledge that as much valuable business experience will be gained from failed ventures as from successful enterprises.

Again, contrary to the United States convention, some venture capital providers in this country appear to be looking for investment opportunities with immediately achievable objectives. Firms exporting imitation-based products do not offer necessarily the same opportunity to achieve phenomenal returns as some United States investments. On the other hand, companies requiring capital for new product R&D work have to convince venture capital providers that the investment will lead to the development of viable commercial products within a reasonable time span. An original and perhaps more profitable approach for venture capital providers in the United Kingdom would be to seek out investment opportunities involving a higher degree of uncertainty, and be prepared to invest over the long term in the future success of both the investee firm and the venture capital organisation. Possible factors inhibiting this mode of operation will be discussed in detail in Chapter 10.

Chapter 9

ISSUES CONCERNING OWNERSHIP AND CONTROL OF SURVEY FIRMS

9.1 INTRODUCTION

Personal ambitions of entrepreneurs have a pervasive influence on the strategic, and hence financial, objectives pursued by firms. More often than not, these personal goals are expressed in terms of the company remaining independent whilst creating a profitable and successful growth-oriented enterprise (Grieve Smith and Fleck, 1989). Business founders may fear that the adoption of venture capital finance, coupled with the resulting partial loss of equity, could precipitate the eventual takeover of the firm. Grieve Smith and Fleck (1987) point out that:

> "It is ... not so much the availability of outside finance that appears to limit expansion, but the implications of accepting it. From the entrepreneur's point of view the ideal supplier of capital will provide additional capital as required (preferably in a combination of non-voting equity and debt) take a long view, not pressing for speedy returns, and not interfere with the running of the company. The ability of venture capital organizations to convince the smaller firms that they can approximate to this ideal may be an important factor in stimulating growth, as major industrial developments generally require control over substantial capital resources," (p65).

9.1.1 Ethos of the founder

The classical economic view of entrepreneurs is that they are striving to maximise profit through the expression of the business venture (Marris, 1966). This is an all too simplistic assumption as few owner/managers prioritise the profit objective. According to Simon (1982) "the entrepreneur may obtain all kinds of 'psychic income' from the firm, quite apart from monetary rewards," (p296). This 'psychic income' may manifest itself in terms of personal achievement and job satisfaction (Parkes, 1988), but more likely emphasis will be placed upon creation and maintenance of autonomy and independence (Curran and Stanworth, 1982). Entrepreneurs stressing these particular goals have been labelled 'dynastically ambitious' by Hodgson (1984). This type of owner/manager foresees a long-term role for his family in the running of the company, and is likely to be reluctant to relinquish part of the ownership of the company, especially to those individuals or institutions which might interfere with his personal autonomy and plans for the business (Stanworth and Curran, 1981; CBI, 1981). A representative of Prelude Technology Investments in Cambridge revealed that they "... avoid investing in companies where control is an emotional issue," (evidence from interview). Conversely, the 'non-dynastically minded' entrepreneur (Hodgson, 1984) takes a short-term orientation to the creation and growth of a business venture, attempting to attract external sources of investment finance in order to rapidly reach the point of "saleability," (Oakey et al., 1988).

Research by Storey et al. (1988) showed that businesses which were prepared to accept lower margins to accelerate sales growth created jobs more quickly than firms whose owners strove for job satisfaction and a secure life style. The study goes on to illustrate that rapidly

growing firms tend to be more marketing oriented, involved in the manufacture of new products, and are interested in developing export opportunities. Fast-growing firms are likely to require significant amounts of capital to achieve these objectives and, thus, they will not be averse to borrowing funds, even where this involves a partial loss of personal equity.

The growth of an enterprise may be stimulated by the involvement of a venture capital organisation, acting as a catalyst to change within the firm. Whilst a firm remains small it is relatively easy for the entrepreneur to maintain control from a 'hub of the wheel' position. However, this becomes tenuous as the business grows especially if the owner/manager is reluctant to delegate the decision-making function. Batchelor (1990d) maintained that, "the singlemindedness which drove the business in its early stages may hinder its later expansion when a more structured approach becomes necessary," (p17). According to Oakey et al. (1988) it is not unusual for venture capital organisations in the United States to replace the original founder with a new managing director and management team. This lending strategy may have significant implications for entrepreneurs who set a premium on maintaining control (see following subsection). That is not to say, however, that the entrepreneur is ejected from the firm as he may stay on in a more technical capacity. Nevertheless, this "...usually ensures that the small firm's entrepreneurial phase is ended," (Oakey et al., 1988, p32), and the equity owners may no longer be the active managers in the business (Simon, 1982).

9.1.2 The control issue

Firms which have adopted venture capital funding consequently may be in one of several different situations: the original founder may still have managerial control of the business but have relinquished part ownership; the previous owner/manager might have surrendered the position of managing director along with part of the equity; or the entrepreneur may have left the company completely, having sold all or the major part of his shareholding. Taylor (1983) and Kramer (1983) have argued that control and ownership of the organisation are two separate issues, and the amount of shares held by founders should not impinge upon effective day-to-day control of the business. Nevertheless, the implication of diluted equity and the loss of control is that the enthusiasm and drive to push the organisation by those entrepreneurs remaining with the firm will be diminished (Simon, 1982).

Interviews with representatives of a number of venture capital organisations revealed the following with regard to the issue of control: "even with a substantial shareholding we control things through agreement, not through shareholding," (interview evidence - Prelude Technology Investments); "we don't get involved in decision-making, but in discussion - we never take a controlling interest," (interview evidence - Scottish Development Agency); "we never take a majority position in the ownership of a company," (interview evidence - 3i); "our equity investment comprises not less than 10 per cent, not more than 40 per cent (interview evidence - British Technology Group); "it is not our policy to take a controlling interest. It has happened, but only through problems. Making the right decisions requires control," (interview evidence - Cambridge Capital Management

Ltd). However, some venture capital organisations are specifically excluded from taking a majority position in an investee company because they would lose their investment trust status, which enables them to buy and sell shares without incurring capital gains tax (interview evidence). Only one of the nine venture capital companies interviewed, Managed Technology Investors of Watford, stated that it was a matter of policy to take a majority share if a large amount of capital was invested in a company (evidence from interview).

STRUCTURE OF THE INVESTMENT

Golder (1983) maintained that the structure of the financing "... can have a material effect on the eventual result of an investment and, therefore, the structure is an important element in setting the price," (p79). The rule of thumb is that venture capital organisations take a percentage of the equity of the firm directly in proportion to the perceived risk of the investment. As such, a higher share of ownership may be requested when the management team is inexperienced and/or the product and the market are unproven (Deloitte Haskins & Sells, 1983). It is in the interests of both founders and financiers to get the right balance between ownership and control of the enterprise. It is not uncommon in the United States for venture capitalists to take a substantial majority equity stake in investee companies (Golder, 1983). One way to compensate for the apparent loss of control this entails is to structure the investment in such a way that if stipulated targets are met by the investee firm, then they are able to recover an increasing share of equity (Golder, 1983). This is an 'earn-out' arrangement and is commonly used in the United States (Lorenz, 1985). This investment technique is less common in the United Kingdom and it tends to be limited to management buy-out

investments (Lorenz, 1985). United Kingdom venture capital organisations have also adapted the 'earn-out' mechanism so that it operates in reverse; that is, the management team start out with a maximum shareholding which the financier dilutes by converting preferred shares to ordinary voting shares if the desired performance is not achieved (Lorenz, 1985).

According to a number of representatives of venture capital organisations in the United Kingdom 'earn-outs,' or 'ratchets' as they are more commonly known, "... put investors and management on opposite sides of the fence," (interview evidence, Baillie Gifford and Company). Hambros Advanced Technology Trust are anti-ratchet at the moment because investors and management rarely agree on the value of the company, which is used to set the targets for the ratchet. "If you follow this course and people don't achieve these targets, then nasty feelings result. The tendency is to our [the venture capitalist] advantage, not theirs [the management], because they always overestimate what they'll achieve," (interview evidence, Hambros Advanced Technology Trust).

The financiers may also structure the investment deal by using a combination of different types of shares, thus limiting the number of ordinary voting or controlling shares in their hands. Nevertheless, convertible preference shares and/or convertible loans involve the imposition of dividend or interest payments, and the investee firm will be required to pay money back almost immediately to the venture capital firm, creating the appearance of giving with one hand and taking away with the other (Golder, 1983). Moreover, by making the current investment convertible, whereby preference shares can be

converted into voting ordinary shares, venture capital organisations are able to benefit from interest payments in the short term with the means to take control of the organisation if the need arises. According to a representative of 3i Ventures, they utilise "... redeemable convertible preference shares to get a dividend [then] if they [investee companies] don't do well we can convert them into ordinary shares," (evidence from interview). The representative of Baillie Gifford and Company maintained that this was "... equity with protection" (interview evidence). Each of these financial instruments will have a different effect on the balance sheet of the firm. For example, interest accruing to a loan is a pre-tax expense, whereas preference share dividends are a post-tax cost, and a high debt to equity ratio as a result of a venture capital loan may affect ability to raise additional loan capital (Deloitte Haskins & Sells, 1983). Nevertheless, two of the venture capital organisations interviewed stated that they always invested in the form of pure equity, rather than loans or preference shares since they did not require a regular income from their investments (interview evidence, Managed Technology Investors Ltd and Hambros Advanced Technology Trust).

FINANCIAL RETURN SOUGHT AND MEANS OF REALISATION

A venture capital firm will look for the deal which will yield the best possible financial gain for its clients (Kramer, 1983) and the return must be greater than that achievable with relatively less risky investments (Deloitte Haskins & Sells, 1983). The time period of the investment is also important, since investors will not wish to tie up funds for long periods unless the potential return offers suitable compensation (Lorenz, 1985). The United States publication "Guide to Venture Capital Sources" illustrates typical return targets set by

venture capital organisations (Table 9.1). Such rates of return may be achieved when successful investee firms are floated on the Stock Exchange, or the Unlisted Securities Market in the case of smaller companies (Deloitte Haskins & Sells, 1983). Alternatively, the investor and investee firm may agree to a trade sale or share re-purchase and, in extreme cases, voluntary liquidation or receivership (Lorenz, 1985). The latter two events are likely where the investment has failed to live up to initial expectations. Nonetheless, the ratio of flotations to takeovers has been estimated to be in the range of 1:4 with successful investments (Fleck and Garnsey, 1987) and, according to a representative of the British Technology Group, "flotations are the exception rather than the rule," (interview evidence). Again, this raises the question of control of the enterprise and whether adoption of venture capital finance is the first step towards eventual sale of the business. Glassmeyer (1983) maintained that in the United States "many investors are counting on the sale of the entire company when they make their initial investment," and since "the sale of a minority position in a private company is extremely difficult, ... the venture capitalist will often seek [to] ... deliver 'control' or 50% or more of the business" in the event of a sale (p77). Even if assurances are given that the investment will not result in a trade sale, "the need of venture capitalists to realise their investments puts a growing firm under pressure to demonstrate short term profitability [for the purposes of flotation] which may be at the expense of long term development," (Fleck and Garnsey, 1987, p22).

Table 9.1 Profit targets of venture capital organisations

	Compounded Annual Rates of Return (pre-tax)
Triple their money in three years	44%
Triple their money in five years	25%
Four times their money in four years	41%
Five times their money in three years	71%
Five times their money in five years	38%
Seven times their money in three years	91%
Seven times their money in five years	48%
Ten times their money in three years	115%
Ten times their money in five years	58%

Source: Golder (1983)

MANAGEMENT PARTICIPATION

The traditional venture capital investor takes an active role in the running of the investee firm in order to advance the company to a position where the investment will be realised (Taylor, 1983). As noted above, in the United States this may mean that the financiers get involved in the day-to-day operations of the company. However, United Kingdom venture capital organisations are more likely just to monitor the investment and offer advice by means of the appointment of a director to the board of management (Lorenz, 1985). Baillie Gifford and Company simply reserve the right to a seat on the board of management, and "... usually take it up when things start going wrong," (interview evidence). This 'hands-off' strategy enables venture capital organisations in the United Kingdom to be party to discussions involving strategic planning, business policy, finance, senior personnel and similar matters (Adler, 1983). The investor will be involved in the critical decision making process whilst the entrepreneur maintains overall day-to-day control.

9.2 REASONS FOR THE ATTITUDES OF FOUNDERS TOWARDS OWNERSHIP

9.2.1 Previous employment situation

It is likely that the attitudes of founders towards their current business ventures will be coloured by their experiences in previous employment situations. The following tables attempt to take account of some of the multiplicity of historical factors influencing entreprenuers in this study when they first established their current business. Amongst these factors is the degree of commitment to a "fast growth" strategy. The respondents were asked to state what their main business goals were at the time of founding the company. Their answers were dichotomised into aggressive and passive categories; aggressive consisting of the pursuit of market share, profit and growth, and passive comprising the aims of using the business to make a secure, comfortable living and/or simply wishing to manufacture and sell products.

Table 9.2 illustrates that 27 founders (almost one third of the personal interview sample) established their companies to pursue the more aggressive goals of market share, profit and/or growth. A slightly higher proportion of founders who had been employees immediately prior to formation of the current firm displayed passive goals (38 in number or 64 per cent) when compared with the previously self-employed (8 founders or 57 per cent). In addition, Table 9.3 indicates that previously self-employed entrepreneurs had a higher tendency to establish firms manufacturing high technology products (12 firms, 75 per cent), than founders who were employees beforehand (28 firms, 44 per cent). No correlation was found to exist between the academic qualifications of the main founder and the type of business

established. Further investigation revealed that, of those twelve previously self-employed entrepreneurs establishing high technology firms (Table 9.3) seven (58 per cent) had not been involved in that type of business before. This implies that five entrepreneurs establishing similar businesses had either sold their shareholding in a surviving company, failed with the previous business venture or maintained an interest in the former company whilst creating the new enterprise. Interestingly, only three of the 60 entrepreneurs (5 per cent) stating their long term intentions aimed to sell the current business, and all three had been employees in their previous occupation. The remaining 57 entrepreneurs wished to stay with their present businesses. However, it emerged that 13 founders (23 per cent) who had initially intended to stay with the company had sold all of their shareholding at the time of the survey.

Table 9.2 Main business goals at formation by prior employment status of main founder

	Employee		Self-employed		Unemployed		Total	
	n	(%)	n	(%)	n	(%)	n	(%)
Passive goals	38	(64.4)	8	(57.1)	1	(100.0)	47	(63.5)
Aggressive goals	21	(35.6)	6	(42.9)	0	(0.0)	27	(36.5)
Total	59	(100.0)	14	(100.0)	1	(100.0)	74	(100.0)

Table 9.3 Technological sophistication by prior employment status of main founder

	Employee		Self-employed		Unemployed		Total	
	n	(%)	n	(%)	n	(%)	n	(%)
High technology	28	(44.4)	12	(75.0)	1	(100.0)	41	(51.3)
Low technology	35	(55.6)	4	(25.0)	0	(0.0)	39	(48.8)
Total	63	(100.0)	16	(100.0)	1	(100.0)	80	(100.0)

9.2.2 Percentage ownership held by the founder

A good indication of the extent of long term commitment to businesses by founding entrepreneurs is the percentage ownership taken by them at the time of establishment. It might be expected that 'dynastically ambitious' entrepreneurs would seek to hold the majority, if not all, of the shareholding of the company. Only 10 entrepreneurs (18 per cent) intending to stay with the company had taken an initial 100 per cent shareholding, although none of the founders who proposed to sell out ultimately had taken up full ownership. Of course, the low incidence of initial 100 per cent shareholdings may be due to raising start-up finance from sources which required an ownership stake, or multiple founders being involved in the formation of the company. Table 9.4 confirms that the greater the number of founders, the smaller the initial ownership level of the main founder. Significantly, 31 firms (53 per cent) which had two or more founders were established with the principal entrepreneur holding less than 50 per cent of the equity. There were only four firms (21 per cent) with one founder who took an ownership level of between one and fifty per cent (significant after a chi-square test at the $p=0.015$ level). This trend is understandable, since the people who are taking the risks of setting up in business and providing the start-up finance would also want the opportunity to share in the rewards in terms of the ownership of the company.

Table 9.4 Percentage ownership of principal entrepreneur by number of founders at time of establishment

	One founder		Two or more founders		Total	
	n	(%)	n	(%)	n	(%)
1-50%	4	(21.1)	31	(52.5)	35	(44.9)
51-99%	8	(42.1)	21	(35.6)	29	(37.2)
100%	7	(36.8)	7	(11.9)	14	(17.9)
Total	19	(100.0)	59	(100.0)	78	(100.0)

Chi-square (2 d.f.) = 9.606 p = 0.015

It might be anticipated that a number of firms with founders possessing less than 50 per cent of the initial ownership would have had contact with venture capital firms. However, according to Table 9.5, the level of recorded contacts showed no significant difference when compared with the percentage of equity held. A possible explanation lies in the fact that this table is concerned with level of ownership when the company was first established, and it has already been shown that venture capital providers in the United Kingdom do not tend to invest in start-up ventures, at least with regard to firms in this study (see Chapter 6, Subsection 6.2.1).

Table 9.5 Whether firm has had contact with venture capital organisations by level of initial ownership of main founder

	% of equity held by founder initially							
	1-50%		51-99%		100%		Total	
	n	(%)	n	(%)	n	(%)	n	(%)
Contact	25	(69.4)	23	(79.3)	11	(78.6)	59	(74.7)
No contact	11	(30.6)	6	(20.7)	3	(21.4)	20	(25.3)
Total	36	(100.0)	29	(100.0)	14	(100.0)	79	(100.0)

It is also interesting to consider the stated business goals with respect to the share of ownership taken by the entrepreneur at the time of founding the company. Table 9.6 indicates that a highly significant nineteen founders (70 per cent) maintained a less than fifty per cent shareholding when pursuing the more aggressive goals of market share, profit and/or growth (chi-square test significant at the p=0.008 level). This compares with 16 founders (a lesser 33 per cent) holding the same minority ownership when interested in the passive aims of securing a comfortable living and/or simply manufacturing and selling their products. Ten companies (21 per cent) with passive objectives and only two firms (7 per cent) in the aggressive goals category maintained total control of the enterprise at the time of founding. Generally speaking, it appears that the less the percentage of equity taken by the founder, the more aggressive the business goals. Perhaps, in order to grow quickly, these companies require substantial injections of external capital. Such funds might only be obtained in return for a share of equity if the company has already borrowed loan capital to the limit of its collateral. As will be demonstrated in Chapter 10, there is no significant correlation between the initial objectives set by the entrepreneurs and the subsequent performance of the firm measured in terms of growth in turnover per employee. This is an important point since it was expected that 'non-dynastically ambitious' entrepreneurs would strive for more rapid growth in order to take the company to a saleable position.

Table 9.6 Percentage ownership of principal entrepreneur at formation by business goals at formation

	Aggressive		Passive		Total	
	n	(%)	n	(%)	n	(%)
1-50%	19	(70.4)	16	(33.3)	35	(46.7)
51-99%	6	(22.2)	22	(45.8)	28	(37.3)
100%	2	(7.4)	10	(20.8)	12	(16.0)
Total	27	(100.0)	48	(100.0)	75	(100.0)

Chi-square (2 d.f.) = 9.606 p = 0.008

9.2.3 Venture capital organisation involvement

The question arises as to whether founders formulate presumptions on the involvement of the venture capitalist organisations as a result of experiences with these financiers, or whether entrepreneurs are aware initially that the adoption of venture capital finance traditionally involves more than the injection of funds; for example, the appointment of a non-executive director. Table 9.7 illustrates that 19 firms (70 per cent) which realised that venture capital finance involved more than just the injection of funds, became recipients. In contrast, only 11 firms (39 per cent) had obtained the finance when believing that it would solely involve the injection of money (chi-square test significanct at the p=0.021 level). This result is extremely interesting as it indicates that entrepreneurs demonstrating awareness of the role venture capital organisations play, over and above the provision of capital, may be more likely to obtain the required finance. Conversely, it could be that awareness of these other conditions incidentally came about as a result of involvement with the venture capital organisation. However, some of the entrepreneurs interviewed had sought venture capital finance precisely because of the perceived added advantages of managerial input and

other benefits. Overall, ten of the 61 respondent companies in contact with venture capital organisations (16 per cent) expected to receive management assistance in tandem with the the required finance.

Table 9.7 Venture capital status by beliefs of founders on involvement of venture capital providers

	Solely money		Money plus		Total	
	n	(%)	n	(%)	n	(%)
Received venture capital (RVC)	11	(39.3)	19	(70.4)	30	(54.5)
Not received venture capital (NVC)	17	(60.7)	8	(29.6)	25	(45.5)
Total	28	(100.0)	27	(100.0)	55	(100.0)

Chi-square (1 d.f.) = 5.357 $p = 0.021$

In order to provide a holistic picture, the expectations of entrepreneurs who did not obtain venture capital finance were also taken into account. Therefore, turning to the beliefs of the seven firms which had been refused finance, five (71 per cent) were only seeking money, whilst the remaining two (29 per cent) expected more than simply financial input. As regards the 23 firms which had decided not to pursue the opportunity of venture capital financing after initial inquiries, twelve (52 per cent) were only interested in money and six (26 per cent) expected other additional services. The remaining 5 companies (22 per cent) did not provide an answer to the question on expectations. Respondents who had no contact with venture capital organisations were not asked to state what they expected to result from the involvement of such a financier, since this would have been a purely hypothetical question. Table 9.8 summarises the beliefs of different categories of survey firms with regard to venture capital status. The evidence from the expectations held by those who have applied for and not received venture capital

funds (NVC1) partially confirms the correlation between successfully obtaining funds and awareness that the involvement of the venture capital provider entails more than the simple provision of finance. However, the direction of this relationship is not clear from the survey data.

Table 9.8 Venture capital status of all firms by beliefs of founders on involvement of venture capital providers

	Solely money		Money plus		Other		Total	
	n	(%)	n	(%)	n	(%)	n	(%)
Received venture capital (RVC)	11	(39.3)	19	(70.4)	1	(16.7)	31	(50.8)
Refused venture capital (NVC1)	5	(17.9)	2	(7.4)	0	(0.0)	7	(11.5)
Not wanting venture capital (NVC2)	12	(42.9)	6	(22.2)	5	(83.3)	23	(37.7)
No contact venture capitalists (NOC)	0	(0.0)	0	(0.0)	0	(0.0)	0	(0.0)
Total	28	(100.0)	27	(100.0)	6	(100.0)	61	(100.0)

CONSIDERATION OF THE USE OF VENTURE CAPITAL

This section is concerned with firms which have had contact with venture capital organisations and not received finance, either because they have been refused funds (NVC1) or because they decided not to pursue the financing opportunity (NVC2). Obviously, all seven companies that had been refused venture capital funds (NVC1) had intended using the finance for a particular project. However, of the 23 firms which had not pursued the venture capital financing opportunity after initial enquiries (NVC2), 6 companies or 26 per cent had reconsidered either because the money was available from a parent company or there was enough internal capital. In only 2 cases (9 per cent) was the use of venture capital avoided due to an expressed

concern over the future independence of the enterprise. However, four of these 23 companies (17 per cent) believed that the financiers required too much equity and six (26 per cent) reconsidered the intended course of action for which they had sought the extra capital.

Respondents who had no contact with venture capital organisations were also asked whether they had considered making use of venture capital finance at any stage. Only two of the 21 respondents (10 per cent) had contemplated attempting to obtain venture capital funds and they had decided that they were not quite ready to take this step. The other nineteen firms did not consider this line of financing at all, either because they believed that the independence and hence control of the enterprise would be threatened (9 firms, 47 per cent) or the required money was available from a parent company (2 firms, 11 per cent) or another source (8 companies, 42 per cent). Table 9.9 summarises responses to the question of whether survey firms have ever considered using venture capital funds.

Table 9.9 Venture capital status by whether firm considered making use of venture capital finance

	Considered using venture capital		Not considered using venture capital		Total	
	n	(%)	n	(%)	n	(%)
Received venture capital (RVC)	31	(58.5)	0	(0.0)	31	(37.8)
Refused venture capital (NVC1)	7	(13.2)	0	(0.0)	7	(8.5)
Not wanting venture capital (NVC2)	13	(24.5)	10	(34.5)	23	(28.0)
No contact venture capitalists (NOC)	2	(3.8)	19	(65.5)	21	(25.6)
Total	53	(100.0)	29	(100.0)	82	(100.0)

9.3 ATTITUDES OF FOUNDERS TOWARDS CONTROL

9.3.1 Independent status

Having established that the desire for independence was important to a number of entrepreneurs when they first established their businesses, this section considers whether founders had remained resolute in this aim. Firstly, respondents were asked whether the firm had been acquired or whether it had remained totally independent since formation. For the purposes of this survey, independence was defined as the board of directors holding effective control on site. Table 9.10 illustrates that 12 firms (over 40 per cent) had been acquired despite the desire to remain independent. This compares with only 7 companies (14 per cent) which had been taken over when the main reason for establishment was not independence. This table is significant following a chi-square test at the level of p=0.005. Nevertheless, the majority of all the companies in this survey remained independent (61 in number or 76 per cent). Table 9.11 expands on the information contained in Table 9.10, but also reveals some interesting anomalies. The current largest shareholder of 16 of the companies (55 per cent) which originally wished to remain independent was external to the business (Table 9.11).

Table 9.10 Independent status of firms by trigger for formation

	Independence goal		Another goal		Total	
	n	(%)	n	(%)	n	(%)
Independent	17	(58.6)	44	(86.3)	61	(76.3)
Acquired	12	(41.4)	7	(13.7)	19	(23.8)
Total	29	(100.0)	51	(100.0)	80	(100.0)

Chi-square (1 d.f.) = 7.807 p = 0.005

Table 9.11 Whether largest shareholder is internal or external by trigger for formation

	Independence goal		Another goal		Total	
	n	(%)	n	(%)	n	(%)
Internal	13	(44.8)	29	(56.9)	42	(52.5)
External	16	(55.2)	22	(43.1)	38	(47.5)
Total	29	(100.0)	51	(100.0)	80	(100.0)

Taking Tables 9.10 and 9.11 together, it emerges that four firms established with the objective of continuing independence maintained they were independent despite having an external shareholder with the largest share of ownership. Likewise, where firms were established for some reason other than independence, 15 companies claimed to be independent when they did not have an internally held largest shareholding. Table 9.12 displays these nineteen respondents who operated independent enterprises even though the largest single shareholding was held externally. Although the result in Table 9.12 is highly significant at the $p=0.00001$ level following a chi-square test, caution is urged because it contains a structural zero in that acquired firms would not have an internal largest shareholder. It should also be noted that the survey companies may still hold a majority internal shareholding even though the largest shareholding is in external hands.

Table 9.12 Independent status by whether largest shareholder is internal or external

	Internal		External		Total	
	n	(%)	n	(%)	n	(%)
Independent	42	(100.0)	19	(46.3)	61	(73.5)
Acquired	0	(0.0)	22	(53.7)	22	(26.5)
Total	42	(100.0)	41	(100.0)	83	(100.0)

Chi-square (1 d.f.) = 30.665 p = 0.00001

9.3.2 Largest shareholder and number of shares held

Obviously the number of shares held by an external owner will have a bearing on attitudes of the firm to the control issue. As might be expected, Table 9.13 shows that all survey firms which have been acquired had a largest shareholder, with a 51 per cent share or more, who was external to the business. Interestingly, enterprises classifying themselves as <u>independent</u> had single largest shareholders with ownership stakes across the range of 1-100 per cent. Twenty three or 100 per cent of the companies with 1-50 per cent of the equity owned by the largest shareholder were independent, as were 35 firms (90 per cent) with the largest shareholder possessing 51-99 per cent and 3 companies (14 per cent) which were 100 per cent owned. This result could be due to a requirement to obtain additional capital entailing the exchange of equity in the process, or to the number of people involved in the foundation of the enterprise as suggested earlier in this chapter.

Table 9.13 Independent status by percentage of equity held by largest shareholder

	% of equity held by largest shareholder							
	1-50%		51-99%		100%		Total	
	n	(%)	n	(%)	n	(%)	n	(%)
Independent	23	(100.0)	35	(89.7)	3	(14.3)	61	(73.5)
Acquired	0	(0.0)	4	(10.3)	18	(85.7)	22	(26.5)
Total	23	(100.0)	39	(100.0)	21	(100.0)	83	(100.0)

Chi-square (2 d.f.) = 51.372 p = 0.00001

With respect to the nineteen firms identified in the previous subsection with the largest single shareholding in external hands, Table 9.14 illustrates that eight of these companies (42 per cent) stated they were independent even though the external owner controlled more than 50 per cent of the equity of the firm. Further investigation revealed that six of these eight companies had received venture capital funds, and this reinforces the aforementioned view that control is concerned with the management of the day-to-day operations of the enterprise and not the level of shareholding. It is likely that this result is characteristic of the United Kingdom, since venture capitalists in the United States often manage their investments in a 'hands-on' manner and exercise a greater degree of control over their investee companies. The eleven firms which had an external largest shareholder in the 1-50 per cent ownership category could claim to be independent on the basis that no one individual or organisation had a majority, and hence controlling interest in the company. Both Table 9.13 and 9.14 are significant at the p=0.00001 level following a chi-square test, but contain structural zeros in the bottom left hand corner cells which necessitates caution when interpreting the results.

Table 9.14 Independent status by percentage of equity held by largest shareholder when largest shareholder is external

	% of equity held by largest shareholder (external)							
	1-50%		51-99%		100%		Total	
	n	(%)	n	(%)	n	(%)	n	(%)
Independent	11	(100.0)	8	(66.7)	0	(0.0)	19	(46.3)
Acquired	0	(0.0)	4	(33.3)	18	(100.0)	22	(53.7)
Total	11	(100.0)	12	(100.0)	18	(100.0)	41	(100.0)

Chi-square (2 d.f.) = 30.276 $p = 0.00001$

It is also interesting to note from Table 9.15 that 14 companies (over 40 per cent) founded over the last decade had an external largest shareholder in the less than 50 per cent equity range, compared with 9 companies (a lesser 18 per cent) established prior to 1980 (chi-square test significant at the level of $p=0.039$). There was also a slightly higher propensity for companies established in the 1980s to have multiple founders (27 firms or an 82 per cent incidence) than those established in the pre-1980 period (35 firms, 69 per cent) and this may have affected the level of equity holdings. The tendency toward smaller shareholdings in firms founded in the last decade may be due partly to age since older companies have had time to settle in terms of ownership. For example, principal founders of older firms may have bought out their co-founders, or may have moved on after selling out to other individuals or companies.

Table 9.15 Percentage of equity held by largest shareholder by year of formation

	Year founded					
	Prior to 1980		1980 onwards		Total	
	n	(%)	n	(%)	n	(%)
1-50%	9	(18.0)	14	(42.4)	23	(27.7)
51-99%	28	(56.0)	11	(33.3)	39	(47.0)
100%	13	(26.0)	8	(24.2)	21	(25.3)
Total	50	(100.0)	33	(100.0)	83	(100.0)

Chi-square (2 d.f.) = 6.478 p = 0.039

9.3.3 The current employment position of the founder

Table 9.16 helps to clarify whether the main founder was still employed by the company against the shareholder with the largest interest in the company. As might be expected, in 34 cases (nearly 90 per cent) where the largest shareholder was the managing director or chairman of the company the founder was still with the firm (Table 9.16). Only 8 of the original founders (38 per cent) were employed in the firm when the main shareholder was a parent company (chi-square test significant at the level of p=0.0004). The 'other' category in Table 9.16 comprises shareholders other than managing directors, chairmen or parent companies, and they may be internal or external to the company. Therefore, Table 9.17 aggregates the data contained in Table 9.16 in order to look at the internal/external status of the largest shareholder against whether the original founder was still employed in the company, and confirms the result in Table 9.16 with a stronger significance level of p=0.0001 following a chi-square test. Basically, the founder of the business is more likely to remain with the firm when the single largest shareholding is held personally or by some other internal member of the company. Perhaps when external

owners become involved the original founder is either forced out of the company or leaves voluntarily. There is also the possibility that the original founder takes his equity stake with him when he leaves, thus maintaining an external shareholding in the business. Although data are not available to confirm these presumptions, Table 9.18 does offer some evidence of cases where the main founder has remained with the firm. In 29 cases (85 per cent) where the founder held the position of managing director or chairman at the time of the personal interview survey, the largest shareholder was also the managing director or chairman of the company. It is also interesting to note that where the largest shareholder was a parent company, seven original founders (88 per cent) maintained the position of managing director or chairman within the firm.

Table 9.16 Whether founder still employed by holder of largest percentage of equity

	MD/Chairman		Parent company		Other		Total	
	n	(%)	n	(%)	n	(%)	n	(%)
Founder employed	34	(87.2)	8	(38.1)	15	(65.2)	57	(68.7)
Founder not employed	5	(12.8)	13	(61.9)	8	(34.8)	26	(31.3)
Total	39	(100.0)	21	(100.0)	23	(100.0)	83	(100.0)

Chi-square (2 d.f.) = 15.464 p = 0.0004

Table 9.17 Whether founder still employed by internal/external status of largest shareholder

	Internal		External		Total	
	n	(%)	n	(%)	n	(%)
Founder employed	37	(88.1)	20	(48.8)	57	(68.7)
Founder not employed	5	(11.9)	21	(51.2)	26	(31.3)
Total	42	(100.0)	41	(100.0)	83	(100.0)

Chi-square (1 d.f.) = 14.906 p = 0.0001

Table 9.18 Employment position of main founder by holder of largest percentage of equity

	MD/Chairman		Parent company		Other		Total	
	n	(%)	n	(%)	n	(%)	n	(%)
MD/Chairman	29	(85.3)	7	(87.5)	10	(66.7)	46	(80.7)
Other directorship	5	(14.7)	1	(12.5)	5	(33.3)	11	(19.3)
Total	34	(100.0)	8	(100.0)	15	(100.0)	57	(100.0)

Table 9.19 comprises firms with an external largest shareholder, and demonstrates that 9 companies (82 per cent) with an external stakeholder owning between one and fifty per cent of the business still employed the original founder. However, in only 5 cases (a lesser 28 per cent) were founders still with the company when the external shareholder controlled all of the equity (significant at the $p=0.018$ level after a chi-square test). In other words, when the external largest shareholding is low the original founder is mostly still employed in the business. The reverse appears to be the case when the external shareholder owns all of the shareholding. This finding is confirmed by Table 9.20, where 14 firms (64 per cent) which had been acquired and 12 of the independent companies (only 20 per cent) no longer employed the original founder. This table is also highly significant following a chi-square test at the level of $p=0.0001$. Obviously, the age of the firm will have an influence on whether the original founder is still employed in the company. Nineteen of the 26 firms (73 per cent) which no longer employed the original owner had been founded prior to 1980, and 14 of these had an external shareholder with the largest proportion of equity whilst nine had been totally acquired. Unfortunately, data were not obtained to

indicate whether any of the original founders had been forced out of the company by the new external owner exercising control, other than when venture capital investors were involved (see the following subsection).

Table 9.19 Whether founder still employed by largest shareholder when largest shareholder is external

	% of equity held by largest shareholder (external)							
	1-50%		51-99%		100%		Total	
	n	(%)	n	(%)	n	(%)	n	(%)
Founder employed	9	(81.8)	6	(50.0)	5	(27.8)	20	(48.8)
Founder not employed	2	(18.2)	6	(50.0)	13	(72.2)	21	(53.7)
Total	11	(100.0)	12	(100.0)	18	(100.0)	41	(100.0)

Chi-square (2 d.f.) = 7.99 p = 0.018

Table 9.20 Whether founder still employed by independent status

	Independent		Acquired		Total	
	n	(%)	n	(%)	n	(%)
Founder employed	49	(80.3)	8	(36.4)	57	(68.7)
Founder not employed	12	(19.7)	14	(63.6)	26	(31.3)
Total	61	(100.0)	22	(100.0)	83	(100.0)

Chi-square (1 d.f.) = 14.527 p = 0.0001

9.3.4 Requirements set by venture capital organisations

The following is a brief overview of the terms and conditions attached to investments by the venture capital organisations for the 31 firms in receipt of this form of finance.

PERCENTAGE OF EQUITY TAKEN

Table 9.21 illustrates that only 11 or 36 per cent of those firms where the managing director or chairman held the largest stake in the business had received venture capital funds (RVC) . This compares with 17 companies (57 per cent) not receiving the finance after initial enquiries (NVC), and 11 firms (50 per cent) which had no interaction with these financiers (NOC), when the managing director or chairman held the largest stake. This table is significant at the level of $p=0.028$ following a chi-square test, and might indicate that firms have to be prepared to relinquish the largest share of equity in order to obtain venture capital funds. Table 9.22 indicates that in 19 cases (63 per cent) the venture capital organisation took less than 50 per cent of the equity of the survey firm. However, nine companies (30 per cent) were required to concede majority ownership to the venture capital organisation or syndicate. In one instance, the venture capital provider made the investment in the form of a loan with an option to convert it to equity should the necessity arise; that is, if the financier believed there was a requirement to exercise control. No trends emerged in terms of the subsequent independent status of the firm, or employment position of the main founder. Indeed, only two of the nine companies (22 per cent) conceding the major equity shareholding to venture capital organisations had been acquired, and in one instance the main founder was still employed with the firm.

Table 9.21 Holder of largest percentage of equity by venture capital status

	Received venture capital (RVC)		Not received venture capital (NVC)		No contact (NOC)		Total	
	n	(%)	n	(%)	n	(%)	n	(%)
MD/Chairman	11	(35.5)	17	(56.7)	11	(50.0)	39	(47.0)
Parent company	5	(16.1)	9	(30.0)	7	(31.8)	21	(25.3)
Other	15	(48.4)	4	(13.3)	4	(18.2)	23	(27.7)
Total	31	(100.0)	30	(100.0)	22	(100.0)	57	(100.0)

Chi-square (4 d.f.) = 10.917 p = 0.028

Table 9.22 Percentage of equity taken by the venture capital organisation (or syndicate) by holder of largest percentage of equity

	MD/ Chairman		Parent company		Other		Total	
	n	(%)	n	(%)	n	(%)	n	(%)
1 - 50%	9	(90.0)	4	(80.0)	6	(40.0)	19	(63.3)
51 - 99%	0	(0.0)	1	(20.0)	8	(53.3)	9	(30.0)
Debt/equity conversion	1	(10.0)	0	(0.0)	1	(6.7)	2	(6.7)
Total	10	(100.0)	5	(100.0)	15	(100.0)	30	(100.0)

EXPECTED RETURN ON INVESTMENT

Fourteen firms (45 per cent) receiving venture capital funds had been informed of the expected return on the investment required by the financier. Of course, this depended upon the nature of the particular investment. For example, when the investment was made in the form of a loan, the financier was typically looking for interest repayments in the range of 11-20 per cent; and an investment of only preference shares called for a dividend in the range of 7.5 to 15 per cent per annum. In only two instances was the expected return on the investment expressed in terms of an internal rate of return.

According to Harrap's Dictionary of Business & Finance (1988) this is the "... hypothetical interest rate, equivalent to the marginal efficiency of capital, which is used to assess the investor's [future] yield ...," (p183). In both cases the expected internal rate of return was in the 30-40 per cent range and, according to Table 9.1, the financiers were hoping to make approximately five times their original investment in five years. The repayment period was delayed for only two of these fourteen firms. Two venture capital organisations were prepared to wait until their formal exit from the investment to realise their return, rather than expecting a regular interest or dividend payment.

NATURE OF THE 'OUT'

In nineteen cases (61 per cent) the venture capitalist organisation had discussed how it would realise its investment. Surprisingly, only three firms were aiming for a definite market listing. A further three companies had the specific opportunity to buy their own shares back from the financier. However, two firms had been informed that the involvement of the venture capital organisation would result in the firm being sold to another company. A further nine respondents indicated that the discussion on the nature of realisation was general in terms, and a number of the above options were a possibility depending upon performance.

SEAT ON THE BOARD

Nineteen firms (61 per cent) had venture capital input not only in the form of finance, but also through representation on the board of management. A further two venture capital organisations had the right to appoint a director but had not exercised it as yet. The

respondents were also asked to state what role the venture capital organisation played in the general running of the firm. As might be expected, those firms with an appointed director tended to interact more with the investor companies. Eight such firms indicated that the venture capital firm played an active role, and the remaining 13 with an appointed or appointee director indicated that the financier either played no role in the running of the company or intervened only in times of trouble.

The general controls imposed by venture capital organisations and, where appropriate, their nominees, included financial expenditure controls (12 firms gave this response), consultation and reporting requirements (10 companies), restrictions on share transfers (4 firms), and staff recruitment controls (3 companies gave this answer). Interestingly, over a quarter of the firms receiving venture capital funds (8 companies) stated that there were no conditions attached to the investment, although three of these firms had a venture capitalist representative appointed as a company director.

CHANGE INDUCED BY VENTURE CAPITAL ORGANISATIONS

This subsection is concerned with whether venture capital providers have acted as catalysts for change, in terms of either operational strategy of the firm or leadership of the company. The percentage of equity taken by the venture capital organisation obviously affects its ability to influence the strategic direction of the company. Twelve respondents (39 per cent) stated that there had been a change in the strategic direction of the company whilst the venture capital organisation was involved with their operations. According to Table 9.23, when the financier controlled 50 per cent or less of the equity

of the investee firm 5 companies or 26 per cent revised their strategic operations. This compares with 5 companies, or a greater 56 per cent, changing strategic direction when the venture capital organisation held the majority shareholding. Looking into this information in a little more detail revealed that the change was prompted by the financier in only six cases. Five companies were advised to revise either the direction of their marketing efforts or their programme for growth, and one firm was required to become less R&D oriented in order to satisfy the requirements of the venture capital organisation.

Table 9.23 Whether firm changed strategic direction by percentage of equity held by venture capital provider

	Percentage of equity					
	1 - 50%		51 - 100%		Total	
	n	(%)	n	(%)	n	(%)
No change in strategy	14	(73.7)	4	(44.4)	18	(64.3)
Change in strategy	5	(26.3)	5	(55.6)	10	(35.7)
Total	19	(100.0)	9	(100.0)	28	(100.0)

Perhaps more important from the control point of view, respondents were asked if there was a change in either leadership or management of the firm during the period of the investment. Twelve firms overall (39 per cent) had altered the composition of their management teams. Table 9.24 illustrates the level of venture capital shareholding against the management status of the investee firm. When the financier held a 51 per cent or greater equity stake, 6 of the study firms (67 per cent) altered the management team in some way. This compares with 6 firms (a lesser 32 per cent) doing so when the venture

capital organisation did not have a majority shareholding. Further investigation revealed that the venture capital organisation had induced this change in nine cases. The changes mainly comprised existing senior directors leaving and new people being brought into the organisation. In two instances, the existing managing director was replaced by someone introduced into the firm by the venture capital organisation. In five of the nine cases the change in management was initiated by a venture capital organisation controlling 50 per cent or less of the shareholding of the investee firm. It is impossible to discern from the data whether the changes were made on an amicable basis.

Table 9.24 Whether firm changed leadership/management by percentage of equity held by venture capital provider

	Percentage of equity					
	1 - 50%		51 - 100%		Total	
	n	(%)	n	(%)	n	(%)
No change in management	13	(68.4)	3	(33.3)	16	(57.1)
Change in management	6	(31.6)	6	(66.7)	12	(42.9)
Total	19	(100.0)	9	(100.0)	28	(100.0)

9.4 SUMMARY AND CONCLUSION

Most entrepreneurs had a vision of staying with the firms they founded in the long term, and maintaining the independence of these enterprises. This was made difficult by the fact that there was a low incidence of initial 100 per cent ownership stakes. Founders pursuing aggressive business goals tended to have less than 50 per cent

ownership at the time of founding. There was no link between the initial ownership stake and receipt of venture capital funds. Firms which were aware that venture capital funding involved more than just the injection of finance had received such an investment. However, the direction of the cause and effect in this relationship was not clear. Some firms did not make use of venture capital funds because of a concern about control of the enterprise, and either obtained the investment finance from other sources or reconsidered their need for capital. Many survey firms were able to maintain independent status where the largest and, in some cases, majority equity shareholding was in external hands. Six independent companies had handed over the major part of their shares to venture capital organisations. No association was apparent between receipt of venture capital funds and the independent status of the firm or employment of the main founder. Venture capital providers did not always make arrangements explicit with regard to realising their investment, although many appointed, or reserved the right to appoint, a director to the board of management of the client firm. To some extent there was evidence that these directors were able to effect strategic and managerial changes within the investee firm.

The need to maintain independence was important when the entrepreneur had a taste of independence in a previous venture. A limited number of founders who had been prior employees set up their firms with the specific intention of selling out at a later stage. A 100 per cent shareholding would facilitate the selling out process, however, few entrepreneurs were able to maintain full ownership of their companies at start-up. Nonetheless, the tendency towards smaller initial shareholdings has its advantages. The greater number of founders

means that the firm has access to a larger amount of start-up capital; and the risks of starting up in business are spread across a number of individuals. In addition, entrepreneurs with more aggressive business ambitions and lower shareholdings perhaps realised that a fast growth strategy required not only a greater capital investment, but also broader management skills to handle the proposed rapid expansion.

Most of the independent enterprises maintained this status due to the fact that no one individual or organisation controlled greater than 50 per cent of the ownership. However, control could be exercised by pooling voting rights with other stakeholders to arrive at an aggregate 51 per cent or greater shareholding. The fact that the equity of six <u>independent</u> companies comprised more than 50 per cent venture capital funds confirms that venture capital organisations do not necessarily wish to take over the running of the investee firm. They do not get involved in the day-to-day decision making in the organisation, even where they hold a majority shareholding, but they may exercise some control over major strategic decisions and who takes these decisions. It is likely that the institutionalised nature of venture capital provision in the United Kingdom has resulted in the situation where there are too many investments to be monitored by too few people. Thus, venture capital organisations cannot afford to get too involved in the running of an investee company.

Independence was of concern to companies not receiving venture capital finance. To a large extent the criticism for not allaying fears about this issue of investor control lies with the venture capital organisations, despite extensive efforts to reassure would be investee firms through their company literature. Discussions with survey firms

which received venture capital finance revealed that, generally speaking, investors avoided making their ultimate intentions explicit with regard to the nature of the 'out'. Therefore, there may be an ever-present fear or threat that the business will be sold in order for the venture capital organisation to realise its investment. This fear may be heightened amongst firms conceding the major share of equity to the provider of venture capital funds. The nature of the exit mechanism will depend upon the ultimate performance of the firm, but the possibility of the organisation being sold is likely to be resisted when independence is at issue. In terms of the management of investee companies, venture capital providers sometimes encourage the enlargement or restructuring of the board of management, perhaps entailing the original founder stepping sideways into a more technical and less administrative position.

A number of firms saw fit not to adopt venture capital funding, not because of a stated concern over the future independence of the enterprise, but because they found the required investment finance from other sources. In two instances, the 'other source' proved to be a parent company, in which circumstances the control of the enterprise is not an issue since the parent already possesses control. However, eight companies adopted external finance other than venture capital, and this would imply that these 'other sources' are more attractive in terms and/or conditions. One problem relates to the fact that the typical venture capital financing package does not involve equity in the form of ordinary voting shares. United Kingdom venture capital organisations tend to invest in the form of loans and preference shares which involve the immediate commencement of interest payments, thus differing very little from bank finance. Indeed, convertible

preference shares may be unattractive to potential investees since they allow venture capital organisations to benefit from regular interest payments as well as the potential to exercise control over the company. A clause in the investment agreement allowing preference shares to be converted into ordinary voting shares means that venture capital organisations will be able to exert pressure on the strategic direction or management of the company if the need arises. Although there is little evidence of this occurring, even where the venture capital firm holds a majority shareholding, the potential threat of loss of management control may have a disquieting effect on the investee firm.

Chapter 10

THE DELIVERY OF VENTURE CAPITAL FINANCE AND THE EXTENT TO WHICH IT IS CRITICAL TO SURVIVAL AND GROWTH

10.1 INTRODUCTION

10.1.1 Market forces

The emergence of high technology industries in the Silicon Valley area of California in the United States has been due, in part, to the availability of venture capital funding (Hambrecht, 1984; Larsen and Rogers, 1984). According to Siegel and Markoff (1985) "... venture capitalism appears to be an excellent mechanism for stimulating the development of new technologies," (p158). The original risk-embracing venture capital firms in the United States often provided entrepreneurs with finance before a product had been proven in the marketplace and, in some cases, before it had even been fully developed (Young, 1985).

However, the tendency in the United Kingdom is towards the provision of later stage development or management buy-out capital as, in both cases, the product, market and management team have been tried and tested (Dean, 1984). This interest in later stage deals implies that

the 'equity gap,' identified in The Wilson Report (1980) and discussed in Chapter 4, still exists. That is, small high technology manufacturing firms in the United Kingdom experience difficulty in raising finance for establishment and growth. Indeed, according to Anthony Costley-White, co-founder of the venture capital firm Oxford Ventures, "... many start-ups which a few years ago could have raised venture finance would be unable to do so now," (Batchelor, 1990b, p15). This observation can be attributed to the change in the investment orientation from early to later stage deals by United Kingdom venture capital organisations, as exhibited by Murray Johnstone, the Glasgow-based venture capital company (see Chapter 7).

However, it is important to note that not all developments in the venture capital industry have been negative. A network of venture capital sources has emerged in the regions outside London and the South East which has, in turn, been joined by a number of regional funds established by venture capital firms with their headquarters in London (Hamilton Fazey, 1987; 1988b). In conjunction, regional venture capital firms tended to focus their investment strategies on specific investment stages, for example start-up or development capital (BVCA, 1987a) and/or particular industrial sectors, for example technology-based funds (Chapman, 1986). These developments may be the result of attempts by venture capitalist organisations to respond to latent demand for investment finance in the regions, since a report by the UK Venture Capital Journal (1986) attributed the concentration of technological investments in the South East by the venture capital industry to the <u>demand</u> for venture capital, as opposed

to the supply. Alternatively, the emergence of regionally-based venture capital organisations may have stimulated demand for such finance in the regions.

10.1.2 Added value

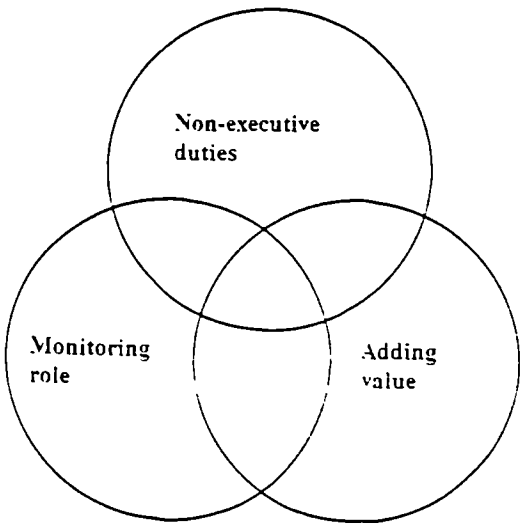
It is useful to consider why an entrepreneur might contemplate making use of venture capital funds as opposed to any other form of finance. To quote one entrepreneur from the United States, "it is far more important whose money you get than how much you get or how much you pay for it," (Timmons, 1983, p71). Traditionally, venture capital companies nurture their investments by providing 'hands-on' assistance to the investee firm beyond the initial provision of finance. This is commonly known as 'adding value' to the investment and involves a number of important areas of contribution by the financier. Firstly, the venture capital organisation may appoint a non-executive director to the board of management of the investee firm, whose duties are similar to any other non-executive director but incorporate an additional monitoring and feedback role for the financial institution (Shoebridge, 1986). As a result, this non-executive director is able to contribute to long-term strategic planning (Lorenz, 1985; Shoebridge, 1986) perhaps getting involved in management restructuring and recruiting key people to fill gaps in the management team (Timmons, 1983; Lorenz, 1985). In addition, the financier can act as a useful sounding board for the ideas and plans of the firm, giving reasonably objective advice as an 'outsider' (Timmons, 1983; Shoebridge, 1986). The director may also assist the investee company by facilitating a networking process between companies financed by the investor, where information on the industry, markets and technology can be exchanged (Marshall, 1983; Timmons, 1983). Finally, the

financier can be an important source of contacts leading to introductions to other venture capital organisations, bankers, lawyers, advertising agencies, public relations outfits, new customers and/or suppliers amongst others (Marshall, 1983; Timmons, 1983; Larsen and Rogers, 1984; Lorenz 1985; Davison, 1986). Thus, investee firms are able to build quickly a network of useful contacts based on the business connections of the venture capital provider. Another important aspect of 'adding value' is the provision of subsequent rounds of additional financing since the investee firm may need more capital, either as a result of unforeseen events or to meet requirements as the firm grows (Timmons, 1983; Shoebridge, 1986; Davison, 1987).

All of the above functions would typify the work of a 'hands-on' venture capitalist (see Figure 10.1) since, in effect, the financier becomes a part-time consultant to the investee firm as well as a source of finance (Davison, 1986). 'Hands-on' investment is much more common in the United States where venture capitalists often take a controlling equity stake and actively participate in the management of the investee firm (Oakey et al., 1988). However, venture capital funds in the United Kingdom have been criticised for the low level of assistance offered to firms in their portfolios, despite claims that they maintain an active involvement (Batchelor, 1990b). This 'hands-off' investment style is characterised by venture capital firms taking a minority equity share (Oakey et al., 1990) and reserving the right to appoint non-executive directors to the board of investee companies, but not necessarily taking up this right. The financier maintains a passive style of investment, getting involved in the operations of the business infrequently and then sometimes only at the request of the

investee firm (Lorenz, 1985). In choosing to adopt the 'hands-off' investment technique, United Kingdom venture capital organisations tend to resemble a banking style of investment unlike their counterparts in the United States (Batchelor, 1990b). This investment strategy means that venture capital organisations do not have to "... take responsibility for the management and the appreciation of their stake in the business," (Oakey et al., 1990, p147). However, Lorenz (1985) has indicated that "high tech investment is not for those venture capital funds that prefer a more passive or reactive 'hands-off' post-investment stance," (p33) since the inherent higher risks of the investment require careful nurturing on the part of the venture capitalist.

Figure 10.1 The Work of a 'Hands-on' Venture Capitalist on the Board of a Company Receiving Venture Capital



Source: Shoebridge (1986)

10.1.3 Suitability for innovation funding

"The role of the venture capitalist in high technology business is more relevant as such businesses need a higher content of equity financing than loan capital," (Flavin, 1982, p21). This view was supported by McMurtry (1986) who maintained that venture capital finance was a form of 'permanent capital.' That is, long term equity where investors receive returns in the form of dividend payments if the company is doing well and producing a profit (Brett, 1989). Under such conditions firms are not subjected to pressures to demonstrate early returns on the investment by venture capital organisations. This would mean that a high technology firm could pursue R&D programmes without having to be concerned with immediate payback since, typically, returns from innovation projects take a number of years to materialise, if at all. Venture capital finance has been promoted as an ideal source of funds for innovation, since the capital can also be advanced quickly at a stage when time is of the essence to the high technology firm; that is, when further development capital is required quickly in order to maintain technological advantage over competitors (Flavin, 1982). Cumming (1983) has identified that "the real gap in the market for equity capital is for finance for R&D" (p101) and banks should not be expected to fill this breach because this is an inherently high risk area (Bogaardt, 1982). There appears to be scope for venture capital funding to fulfil this highly important financial market niche since "without risk capital, there cannot be innovation on an adequate scale," (Andriessen, 1981, p11).

10.1.4 Issue of risk

Flavin (1982) has observed that:

> "There have been pressures on the venture capital companies to avoid taking high risks. The principal among these was the need to win the confidence of the investment community in the returns achievable in venture capital investment and the need for the venture capitalist to avoid a failure image in the eyes of the business community and more particularly potential entrepreneurs," (p19).

This strategy is perhaps understandable when the venture capital industry is still in a fledgeling state of development. However, questions are still being asked about whether venture capital organisations in the United Kingdom are risk takers eight years after the above observation. Bennet (1987) identified that only two per cent of the electronics companies which approached venture capital funds actually received help from them. Evidence such as this prompted Batchelor (1987) to write that, "... venture capital funds are not going where they are most needed: to provide equity backing for the young, innovative companies which will be needed to create wealth and jobs in the 1990s," (p20). Even in 1990, the same author noted that technology-related businesses in the United States appeared much more able to attract venture capital finance than similar firms in the United Kingdom (Batchelor, 1990b).

This continuing trend may be the result of experiences of pioneering venture capital companies in the United Kingdom in the early 1980s. These funds were operated by banks and other established City institutions and, initially, they targeted investment funds towards newly established high risk firms. However, a number of these companies failed, and the venture capital industry became nervous and more risk averse as a result (Batchelor, 1987). This still appears to

be the case, since many venture capital funds concentrate on the less risky, later stage financial deals. Fast (1983) puts the problem in a nutshell, "the real risk here is that we get a snowball effect; some initial failures, the withdrawal of the institutions financing the industry, and the problem then feeds on itself," (p80). The 'withdrawal of institutions financing the industry' is quite crucial since "the vast majority of financial institutions [including pension funds] have to safeguard shareholders funds. Many aren't allowed to invest in loss-making companies" (interview evidence with a representative of 3i Ventures).

The following subsection details the operations of the venture capital market in relation to the survey sample, and considers whether demand or supply factors drive the relationship between investees and investors.

10.2 MARKET FOR VENTURE CAPITAL FINANCE

The 61 firms which had previous dealings with venture capital organisations were asked whether the investor or the investee established the relationship. Table 10.1 illustrates that, at the chi-square significance level of $p=0.0007$, more firms which initiated the contact tended to receive venture capital funds (20 firms or 67 per cent) than those that were approached. A much reduced 2 firms (12 per cent) accessed venture capital finance when the financiers established the relationship. A third category was included for firms which could not specifically determine who had first made contact, and 9 of these firms or 64 per cent received venture capital funds. These

results initially appear surprising, since it might be expected that venture capital providers would be selective about prospective investment opportunities. However, some firms which have been approached by venture capital organisations may not have wanted investment finance on the terms offered, and this might explain the low adoption rate when financiers took the initiative. Similarly, it might be assumed that venture capital funds receive so many applications for finance that they have to turn down a substantial number. Nevertheless, the high adoption rate when firms initiated the contact might be explained by careful and thorough presentations by the potential investees, at the appropriate stage in their investment cycle, resulting in convincing cases for receiving investment finance. This outcome confirms that venture capital firms are largely reactive in terms of the delivery of funds.

Table 10.1 Whether received venture capital by nature of contact with venture capital providers

	Who initiated the contact							
	Firm		Venture capitalist		Combination		Total	
	n	(%)	n	(%)	n	(%)	n	(%)
Received venture capital (RVC)	20	(66.7)	2	(11.8)	9	(64.3)	31	(50.8)
Not received venture capital (NVC)	10	(33.3)	15	(88.2)	5	(35.7)	30	(49.2)
Total	30	(100.0)	17	(100.0)	14	(100.0)	61	(100.0)

Chi-square (2 d.f.) = 14.405 p = 0.0007

Generally, venture capital providers appeared more interested in initiating contact with firms which had been operating for more than ten years. When the firm was less than 10 years old, the firm itself tended to apply for venture capital funds. According to Table 10.2, sixteen firms (53 per cent) founded in the 1980s initiated contact compared with 3 instances (18 per cent) where the financiers established communication. A third category is included in this table for instances where respondents were unsure about who initiated contact. This table proved to be significant at the $p=0.048$ level following a chi-square test. In addition, Table 10.3 indicates that the majority of firms (7 in number or 64 per cent) contacted by the financier prior to 1984 received funds, compared with only 4 companies (20 per cent) contacted in the 1984-1989 period (chi-square test significant at the $p=0.015$ level). These results must reflect partly the emergence of venture capital in the 1980s as a source of funding, and newer firms learning of the existence of venture capital when seeking start-up finance. By implication, older firms would be more familiar with traditional sources of finance, and venture capital firms may themselves have had to create a general awareness amongst such companies. It would also appear from Table 10.4 that it is advantageous to approach, or be approached by, venture capital organisations with a specific interest in technological investments. Seventeen firms (74 per cent) in this sample received the required finance from just such a source. This compares with only 13 firms (38 per cent) receiving funds from general venture capital funds with no specific technological focus (chi-square test significant at the level of $p=0.008$).

Table 10.2 Year of formation by nature of contact with venture capital providers

	Who initiated the contact							
	Firm		Venture capitalist		Combination		Total	
	n	(%)	n	(%)	n	(%)	n	(%)
Prior to 1980	14	(46.7)	14	(82.4)	7	(50.0)	35	(57.4)
1980 onwards	16	(53.3)	3	(17.6)	7	(50.0)	26	(42.6)
Total	30	(100.0)	17	(100.0)	14	(100.0)	61	(100.0)

Chi-square (2 d.f.) = 6.055 p = 0.048

Table 10.3 Whether received venture capital by year venture capital provider made contact

	1978-1983		1984-1989		Total	
	n	(%)	n	(%)	n	(%)
Received venture capital	7	(63.6)	4	(20.0)	11	(35.5)
Not received venture capital	4	(36.4)	16	(80.0)	20	(64.5)
Total	11	(100.0)	20	(100.0)	31	(100.0)

Chi-square (1 d.f.) = 5.903 p = 0.015

Table 10.4 Whether received venture capital by type of venture capital organisation

	General		Technology specialisation		Total	
	n	(%)	n	(%)	n	(%)
Received venture capital	13	(38.2)	17	(73.9)	30	(52.6)
Not received venture capital	21	(61.8)	6	(26.1)	27	(47.4)
Total	34	(100.0)	23	(100.0)	57	(100.0)

Chi-square (1 d.f.) = 7.005 p = 0.008

10.2.1 Awareness of venture capital opportunities

The entrepreneur may be stimulated to request venture capital finance in order to support a specific technological development. Venture capital funds are ideally suited to this purpose since long term funding can compensate for delayed returns associated with product development work. On the other hand, venture capital funds may be required to support a strategy of accelerated growth by the entrepreneur.

Interestingly, Table 10.5 demonstrates that firms with the passive objectives of securing a comfortable living and simply wishing to manufacture and sell products received venture capital funding in 21 cases (44 per cent). This compares with only eight entrepreneurs (30 per cent) who obtained venture capital finance whilst pursuing the more aggressive aims of market share, profit and growth. However, firms pursuing aggressive objectives did not appear to be disadvantaged by the lack of venture capital funds. A large percentage of firms pursuing aggressive business goals but which had not received venture capital funds (NVC) achieved a 51 per cent or greater growth rate in turnover (6 firms or 60 per cent) and employee numbers (5 firms or 50 per cent). In terms of passive firms receiving venture capital funds (RVC), 9 companies (64 per cent) achieved a 51 per cent or greater increase in turnover, and 8 firms (50 per cent) achieved a similar employee growth level. Given that the percentage results are not too dissimilar, the presence of venture capital might enable passive firms to achieve comparable growth levels to aggressive growth oriented firms. On the other hand, perhaps firms with passive goals <u>at the time of founding</u> have, subsequently, become more aggressive and growth oriented as a result of receiving the venture

capital input. It should be noted that percentage growth in turnover and employee levels can only be calculated for firms founded prior to 1984 because growth is measured over the period 1984 to 1989. This explains any anomalies between Table 10.5 and the above figures.

Table 10.5 Incidence of venture capital funding by business goals at formation

	Aggressive		Passive		Total	
	n	(%)	n	(%)	n	(%)
Received venture capital (RVC)	8	(29.6)	21	(43.8)	29	(38.7)
Not received venture capital (NVC)	12	(44.4)	15	(31.3)	27	(36.0)
No contact with venture capitalists (NOC)	7	(25.9)	12	(25.0)	19	(25.3)
Total	27	(100.0)	48	(100.0)	75	(100.0)

Respondents were also asked whether they could have achieved a higher level of growth, but for the presence of some inhibiting factor. Both aggressive and passive firms cited lack of orders as the major impediment to expansion (10 firms, 42 per cent and 17 firms, 36 per cent respectively) followed by lack of finance (5 firms, 21 per cent and 15 firms, 32 per cent respectively). A number of the lower technology firms, in particular, believed they were financially constrained (13 companies, 35 per cent) whereas 18 of the higher technology firms (43 per cent) felt restricted mostly by the lack of orders. The majority of firms had overcome the main constraint they faced in 1984 only to be faced by a different constraining factor in 1989 (Table 10.6). However, of those companies facing the same constraining factors, thirteen or 39 per cent were lower technology firms and only six or 16 per cent belonged to the higher technology category (chi-square test significant at the level of p=0.025). The

financial restriction appeared to be a constant problem for a number of the lower technology firms over the period 1984 to 1989. Chapter 7 established that many of the lower technology firms in this sample generally have been unable to attract venture capital funds, despite pursuing more aggressive growth strategies than their higher technology counterparts (Chapter 9).

Table 10.6 1984 and 1989 constraints by technological sophistication

	High technology		Low technology		Total	
	n	(%)	n	(%)	n	(%)
Constraints the same	6	(15.8)	13	(39.4)	19	(26.8)
Constraints different	32	(84.2)	20	(60.6)	52	(73.2)
Total	38	(100.0)	33	(100.0)	71	(100.0)

Chi-square (1 d.f.) = 5.021 $p = 0.025$

A greater percentage of the higher technology firms approached more than one source of venture capital funds when compared with the lower technology companies, and applicants who were not put off after one unsuccessful attempt were more likely to receive the required finance (Table 10.7). The lower technology firms might be time constrained by the limited market opportunities offered by their imitation/improvement product strategies, since it is important to obtain market share as quickly as possible, and they may have decided not to pursue the possibility of venture capital funding beyond a single approach. In addition, because of the existing market for the imitation/improvement product and a perceived smaller risk, these firms might be able to attract alternative forms of finance, for example bank funding. However, more technologically sophisticated

firms might have encountered difficulty in raising investment finance for product development strategies, and so are forced to explore multiple lending sources until the required funds have been obtained. Table 10.8 also indicates that the age of the firm has a significant bearing on the number of venture capital organisations approached. Newer companies appear more likely to make a sustained effort to attract this form of finance by approaching more than one venture capital provider. Twenty one companies (91 per cent) founded in 1980 or later approached two or more venture capital organisations, compared with only 11 firms (55 per cent) founded prior to 1980 (chi-square test significant at the $p=0.007$ level). This is likely to be a cause of the previously noted observation that younger firms tend to receive venture capital funds.

Table 10.7 Number of venture capital providers approached by technological sophistication and incidence of venture capital funding

	Technological sophistication						Venture capital status					
	High		Low		Total		Received funds		Not received funds		Total	
	n	(%)	n	(%)	n	(%)	n	(%)	n	(%)	n	(%)
1	3	(11.5)	8	(47.1)	11	(25.6)	3	(10.7)	8	(53.3)	11	(25.6)
2+	23	(88.5)	9	(52.9)	32	(74.4)	25	(89.3)	7	(46.7)	32	(74.4)
Total	26	(100.0)	17	(100.0)	43	(100.0)	28	(100.0)	15	(100.0)	43	(100.0)

Table 10.8 Number of venture capital providers approached by year of formation

	Year firm was founded					
	Prior to 1980		1980 onwards		Total	
	n	(%)	n	(%)	n	(%)
1	9	(45.0)	2	(8.7)	11	(25.6)
2+	11	(55.0)	21	(91.3)	32	(74.4)
Total	20	(100.0)	23	(100.0)	43	(100.0)

Chi-square (1 d.f.) = 7.406 $p = 0.007$

10.2.2 Awareness of investment opportunities

Evidence cited earlier in this chapter indicated that venture capital organisations are not particularly active in selling their services. If the responsibility lies mainly with the entrepreneur to establish contact, this means that suitable investment opportunities could be missed due to lack of awareness on the part of both the venture capital provider and the entrepreneur. It is encouraging that only one of the 83 respondents in this survey had not heard of the concept of venture capital financing. However, 22 firms had not had any form of contact with venture capital organisations at any time.

An attempt was made to investigate whether venture capital providers have missed investment opportunities, both in terms of firms with which they have had no contact and companies which may have been refused investment finance at some stage. To this end, all the respondents were asked whether they had abandoned a significant product innovation after initial development work. The answer to this question was cross-tabulated with the main product strategy of the firm; that is, whether the company manufactured imitation-based

products, improved products to those already available in the marketplace, or totally new products to the market. Table 10.9 illustrates that 40 firms (nearly half of the total sample of 83 companies) manufacturing totally new products had abandoned one or more innovation projects (chi-square test significant at the p=0.033 level). Thirteen of these 40 respondents (33 per cent) indicated that a lack of resources, including time, manpower and investment capital, had been a constraint. Other restrictions on innovation programmes included market/competition problems (17 companies, 43 per cent) and the development work required to bring the product to market at a reasonable cost (10 firms, 25 per cent). Therefore, the lack of finance was a problem affecting the innovation process for only a notable minority of companies.

Table 10.9 Main product innovation type by incidence of abandoned innovation projects

	Not abandoned innovation		Abandoned innovation		Total	
	n	(%)	n	(%)	n	(%)
Imitation	5	(25.0)	5	(8.2)	10	(12.3)
Improvement	8	(40.0)	16	(26.2)	24	(29.6)
Totally new	7	(35.0)	40	(65.6)	47	(58.0)
Total	20	(100.0)	61	(100.0)	81	(100.0)

Chi-square (2 d.f.) = 6.835 p = 0.033

It is useful to consider these innovation constraints in relation to the level of growth achieved by the survey firms. The lack of resources, including capital, emerged as the major problem for 8 firms or 57 per cent in the no growth or decline category, whilst 13 growing firms (42 per cent) experienced market problems. Interestingly, in only one out of twelve cases did a venture capital provider approach a

firm undergoing a period of decline. These two results suggest that the innovation programmes of some declining or no growth firms may be constrained by a general lack of resources including finance, despite many having explored the possibility of venture capital funding. Further investigation revealed that declining or no growth firms were not specifically burdened by high R&D costs when compared with growing companies. Indeed, declining or no growth firms generally exhibited a lower R&D spend, although this could be an effect of the financial resource constraint.

10.3 THE DELIVERY OF VENTURE CAPITAL FINANCE

10.3.1 Promotional efforts

Venture capital organisations must have created awareness of the venture capital funding option in the financial marketplace in order to encourage companies to establish contact. A simple means of creating this consciousness is to send out company literature to prospective clients and their contacts, for example accountants and solicitors. Table 10.10 illustrates that promotional efforts of venture capital organisations were most useful for survey firms established prior to 1980. Six firms (33 per cent) founded prior to 1980 were alerted to the possibility of venture financing by literature produced by venture capital companies, compared with only two youngers firms (9 per cent). This substantiates the observation that older firms tend not to seek venture capital actively on their own initiative. However, venture capital firms initiated direct contact in only a minority of cases. According to Table 10.10,

personal contacts mostly performed the intermediary function of informing survey firms about venture capital funding (a 50 per cent or greater incidence for firms regardless of foundation date).

Table 10.10 How firms discovered venture capital organisations by year of formation

	Prior to 1980		1980 onwards		Total	
	n	(%)	n	(%)	n	(%)
Intermediary	9	(50.0)	13	(59.1)	22	(55.0)
Promotional material	6	(33.3)	2	(9.1)	8	(20.0)
Other	3	(16.7)	7	(31.8)	10	(25.0)
Total	18	(100.0)	22	(100.0)	40	(100.0)

Promotional efforts of venture capital organisations generally attracted firms which had been established with mostly internal capital. This is perhaps understandable, since externally funded start-ups would have established a number of financial contacts during their start-up phase, including venture capital firms and contacts of venture capital providers.

10.3.2 Turnaround of venture capital deals

Before considering the speed with which survey firms received venture capital finance, it is useful to gain a general idea of when companies actually received the investment. Table 10.11 demonstrates that ten firms (77 per cent) founded prior to 1980 received their most recent, or only, injection of venture capital finance before 1985. This compares with only 5 companies (28 per cent) established within the last decade which received the finance prior to 1985 (chi-square test significant at the p=0.007 level). This result is understandable

given that only a limited number of younger firms in the sample would have been established in the years 1980 to 1984, and also given the aforementioned evidence that venture capital organisations do not tend to invest in start-up situations. Interestingly, the reduction in older firms receiving venture capital finance over the last ten years may be a result of recently reduced marketing efforts by venture capital organisations, due to increasing general awareness of venture capital as a source of finance.

Table 10.11 Date of most recent injection of venture capital finance by year of formation

	Year of formation					
	Prior to 1980		1980 onwards		Total	
	n	(%)	n	(%)	n	(%)
Received finance pre-1985	10	(76.9)	5	(27.8)	15	(48.4)
Received finance 1985 onwards	3	(23.1)	13	(72.2)	16	(51.6)
Total	13	(100.0)	18	(100.0)	31	(100.0)

Chi-square (1 d.f.) = 7.300 p = 0.007

As might be expected, no trend emerged when examining how quickly survey firms received their most recent injection of venture capital funds against when they were founded. However, Table 10.12 indicates that firms exhibiting no growth, or in a period of decline, mostly were required to wait longer than six months from the date of application before receiving investment finance. Four companies (67 per cent) in the no growth or decline category, compared with 2 firms (13 per cent) exhibiting growth, received the venture capital finance after more than six months of waiting. Typically, expanding firms

experienced a two to six month delay between application and receipt (10 companies or 67 per cent). One possible explanation for this observed time difference between effectively declining and growing firms is the longer vetting period associated with the former category of companies. Because more than 20 per cent of the cells in Table 10.12 have an expected frequency of less than five, it is not possible to estimate the significance level resulting from the correlation of growth and delay in receiving venture capital funds. This is due to the relatively small number of relevant cases included in the analysis at this level of disaggregation.

Table 10.12 How quickly firms received venture capital finance by incidence of growth

	Positive growth		Negative growth		Total	
	n	(%)	n	(%)	n	(%)
1-4 weeks	3	(20.0)	1	(16.7)	4	(19.0)
2-6 months	10	(66.7)	1	(16.7)	11	(52.4)
7 months +	2	(13.3)	4	(66.7)	6	(28.6)
Total	15	(100.0)	6	(100.0)	21	(100.0)

It is also interesting to note from Table 10.12 that a number of firms received the required finance within a month of application. This indicates that venture capital funds can be advanced quickly. Therefore, venture capital may be an ideal source of finance for firms requiring R&D funds to stay ahead of competitors with a particular technological development. However, Table 10.13 indicates that none of the firms which received venture capital funds within a month of application required the capital for product development purposes. Three firms required working capital and four used the finance for

marketing or other purposes. Included in the 'marketing and other' category are three firms which required capital for a management buy-out, and only one received the funds in four weeks or less. Business Expansion Scheme (BES) funds and 3i were relatively quick to turnaround venture capital deals. Nine companies (50 per cent) which had to wait up to six months mostly received venture capital funds from direct captive subsidiaries of other financial institutions.

Perhaps this supports the accusation that venture capital firms behave more like banks. If financial institutions effectively own and manage venture capital units, then lending procedures and general bureaucracy are likely to be similar. Mention should be made here of the venture capital company 3i; although the shareholders are financial institutions, 3i is operated effectively as an independent enterprise as opposed to being directly associated with one particular bank. However, 3i includes a high loan content in its investment packages, either in terms of direct loans or quasi-loans such as preference shares, which is not too dissimilar to the lending procedures of the banks.

Table 10.13 How quickly firms received venture capital finance by use of funds

	Working capital		Product development		Marketing & other		Total	
	n	(%)	n	(%)	n	(%)	n	(%)
1-4 weeks	3	(30.0)	0	(0.0)	4	(26.7)	7	(22.6)
2-6 months	5	(50.0)	4	(66.7)	9	(60.0)	18	(58.1)
7 months +	2	(20.0)	2	(33.3)	2	(13.3)	6	(19.4)
Total	10	(100.0)	6	(100.0)	15	(100.0)	31	(52.4)

10.4 ADDED VALUE ASPECT OF THE INVESTMENT

10.4.1 Assistance

In order to ascertain whether venture capital organisations attempted to 'add value' to their investments in any way, survey firms were asked if they had received any assistance beyond the provision of finance. Table 10.14 lists assistance which survey firms received from their respective venture capital investors, and respondents were able to provide more than one answer to this question. As a result, the chi-square statistic could not be used on this table and those following, and this also explains the inclusion of two column totals; the first total is concerned with the number of responses, and the second total indicates how many firms gave these answers. In eight cases (over 60 per cent) where firms were established prior to 1980 no assistance was received beyond the provision of capital (Table 10.14). However, amongst those companies founded within the last decade there were 6 instances (35 per cent) where firms received general management advice from venture capital providers, and four cases (24 per cent) where respondents believed that they had benefited from the experience of the financiers. Perhaps younger firms were more able to benefit from the experience and advice of venture capital organisations since most of the understanding of the traditional venture capitalist has been built around companies in their formative stages. Support for this statement is provided by Table 10.15, which illustrates that in ten cases where companies were at a later stage in their development these companies received no assistance whatsoever from the venture capital institution. However, some later-stage companies acknowledged that management advice was useful (three cases), in five instances companies had help with accounting procedures and liaising with the

bank manager, and in three cases senior executives were recruited with the assistance of their respective investors. On the other hand, of those firms receiving venture capital input in their early development stages, there were three instances where firms received management advice from the financiers, and three respondents acknowledged that the greater experience of the venture capital provider was helpful. Finally, in two cases firms believed that their financiers were good sources of contacts when they were just starting out in business. The term networking covers situations where venture capital providers put investee firms in contact with other businesses. This process was investigated further by means of separate and distinct questions in the interview questionnaire, the results of which are set out below.

Table 10.14 Assistance received from venture capital organisations by year of formation

	Prior to 1980		1980 onwards		Total	
	n	(%)	n	(%)	n	(%)
No assistance	8	(61.5)	4	(23.5)	12	(40.0)
Management advice	0	(0.0)	6	(35.3)	6	(20.0)
Accounting/bank assistance	2	(15.4)	3	(17.6)	5	(16.7)
Venture capital firm experience	1	(7.7)	4	(23.5)	5	(16.7)
Recruitment help	1	(7.7)	2	(11.8)	3	(10.0)
Network contacts	0	(0.0)	2	(11.8)	2	(6.7)
Legal assistance	1	(7.7)	0	(0.0)	1	(3.3)
Other	2	(15.4)	2	(11.8)	4	(13.3)
Total responses	15	-----	23	-----	38	-----
Total firms	13	-----	17	-----	30	-----

Table 10.15 Assistance received from venture capital organisations by stage of growth of survey firms

	Just after start-up		At a later stage		Total	
	n	(%)	n	(%)	n	(%)
No assistance	1	(20.0)	10	(41.6)	11	(37.9)
Management advice	3	(60.0)	3	(12.5)	6	(20.7)
Accounting/bank assistance	0	(0.0)	5	(20.8)	5	(17.2)
Venture capital firm experience	3	(60.0)	2	(8.3)	5	(17.2)
Recruitment help	0	(0.0)	3	(12.5)	3	(10.3)
Network contacts	2	(40.0)	0	(0.0)	2	(6.9)
Legal assistance	0	(0.0)	1	(4.2)	1	(3.4)
Other	0	(0.0)	4	(16.7)	4	(13.8)
Total responses	9	-----	28	-----	37	-----
Total firms	5	-----	24	-----	29	-----

10.4.2 Networking

Table 10.16 illustrates that companies both at an early and later development stage received introductions to third parties by venture capital institutions. Three survey firms which had just started out in business, and four which were at a later stage of development, acknowledged that they had been introduced to other investee companies of a synergistic nature; that is, companies which were complementary in terms of technology, products or markets. The financiers believed these companies would be able to share common knowledge and experiences. Other contacts made as a direct result of the involvement of the venture capital organisation were with potential customers and suppliers. Also noteworthy are introductions to other possible sources of finance amongst those firms at a later stage of development (4 firms). It is possible that some of these other

financiers could comprise venture capital organisations, since the survey revealed some evidence of investment deals being syndicated amongst a number of venture capital financiers.

Table 10.16 Introductions by venture capital organisations by stage of growth

	Just after start-up		At a later stage		Total	
	n	(%)	n	(%)	n	(%)
Synergistic companies	3	(75.0)	4	(66.7)	7	(53.8)
Other financiers	1	(25.0)	4	(66.7)	5	(38.5)
Potential suppliers	2	(50.0)	3	(50.0)	5	(38.5)
Potential customers	2	(50.0)	2	(33.3)	4	(30.8)
Consultants	0	(0.0)	2	(33.3)	2	(15.4)
Total responses	8	-----	15	-----	23	-----
Total	4	-----	6	-----	10	-----

Previous subsections noted the tendency for venture capital institutions to interact more with survey firms established over the last ten years and, it would appear, younger firms have also been inclined to receive introductions to other parties. Table 10.17 illustrates that these contacts consisted of synergistic companies (5 firms) other financial institutions (4 companies) potential customers (4 companies) and/or suppliers (4 firms). However, these results only indicate whether introductions to third parties resulted from venture capital involvement. They do not reveal whether survey firms believed that any benefit had emerged as a result. Overall, of the 13 firms which had been introduced to potential business contacts, only 5 firms (38 per cent) believed that there had been useful results. Two companies received additional finance from contacts of their respective venture capital organisations, another two firms acquired

new customers/suppliers, and one company was pursuing a new market opportunity as a result. The venture capital organisations have attempted to 'add value' to the investment in these five cases by augmenting the current operations of the investee firm. However, eight companies (a large 62 percent) believed that nothing had emerged from discussions with contacts of their respective financiers, and this applied to firms regardless of their age. However, a representative of Baillie Gifford and Company pointed out that they were "... very often frustrated with companies because they didn't follow up on introductions and recommendations," (interview evidence). Perhaps this is because the process is time consuming for small firms, especially when only "one in ten contacts might come to something," (interview evidence from a representative of Hambros Advanced Technology Trust).

Table 10.17 Introductions by venture capital organisations by year of formation

	Prior to 1980		1980 onwards		Total	
	n	(%)	n	(%)	n	(%)
Synergistic companies	2	(40.0)	5	(62.5)	7	(53.8)
Other financiers	1	(20.0)	4	(50.0)	5	(38.5)
Potential suppliers	1	(20.0)	4	(50.0)	5	(38.5)
Potential customers	0	(0.0)	4	(50.0)	4	(30.8)
Consultants	2	(40.0)	0	(0.0)	2	(15.4)
Total responses	6	-----	17	-----	23	-----
Total firms	5	-----	8	-----	13	-----

10.4.3 Benefit of venture capital finance

The respondents were asked whether they perceived any specific advantages or disadvantages in utilising venture capital funds. Twenty four of the 31 firms receiving venture capital finance (77 per cent) stated that there were advantages associated with this type of investment capital. Twelve companies (50 per cent) simply stated that receiving the money was the main advantage, although seven firms acknowledged that their survival depended upon it. Five firms (21 per cent) specifically stated that they would not have survived without the injection of venture capital funds, whilst a further seven companies (29 per cent) indicated that the expertise of the financier was the major benefit. Conversely, 19 of the 31 respondents (61 per cent) perceived some form of disadvantage with venture capital finance. Nine firms (47 per cent) believed that the venture capital institution imposed restraints under which they found it difficult to operate, five companies (26 per cent) maintained that the financier took too much equity in return for the capital, a further three firms (16 per cent) complained of the lack of peripheral services beyond the initial provision of finance, and two interviewees (11 per cent) believed that the venture capital organisation was unprofessional in the way it structured the deal. Nevertheless, 29 of the 31 firms which had received venture capital finance (94 per cent) stated that they were currently in a better business position than they would have been without the funds.

The next subsection investigates this result further by attempting to discover whether, and to what extent, the injection of venture capital finance was critical to the future survival of the survey firm. In most cases the results which follow are based on the 31 firms which

received venture capital funding. The small number of cases involved means that statistically significant results are often difficult to obtain using the chi-square statistic. Nevertheless, the results may shed some light on the nature of the value of venture capital finance.

10.5 VENTURE CAPITAL FIRMS - LENDERS OF LAST RESORT?

10.5.1 Source of critical finance

Venture capital may be 'crowding out' other possible sources of funds, or it may be a unique source of finance for companies unable to obtain capital from any other source. Table 10.18 illustrates that 25 companies (a substantial 81 per cent) receiving venture capital funds believed that the injection of finance was critical, and this belief was more pronounced for firms founded over the last decade. Sixteen companies (90 per cent) established in the post-1979 period maintained that the injection of venture capital funds was critical, compared with nine firms (a lesser 69 per cent) founded prior to 1980. This tendency could be a result of younger firms still experiencing growing pains associated with the start-up process. This assumption is supported by Table 10.19. Sixteen firms (67 per cent) indicated that they would no longer be in business save for the injection of venture capital funds, and thirteen of these companies (81 per cent) had been founded during the last decade. This table fails to be significant because more than 20 per cent of the cells have an expected frequency of less than five (25 per cent in this instance). Further analysis of these 'surviving as a result of venture capital funding' firms revealed no difference in terms of either location or high/low technology variation. The size of the company in terms of the number

of emloyees, however, did appear to play a major part. Table 10.20 demonstrates that 11 companies (92 per cent) employing 25 employees or less maintained they would not exist without the critical injection of venture capital finance. This contrasts with only 5 of the larger companies (42 per cent) which would no longer be in existence without venture capital funding. These results serve to illustrate the fragile nature of the start-up process for small businesses, and also the need for crucial supplementary injections of investment finance after establishment. The most important result to emerge from Tables 10.19 and 10.20 is that sixteen survey firms attributed their current existence to venture capital providers.

Table 10.18 Whether venture capital funds were critical by year of formation

	Prior to 1980		1980 onwards		Total	
	n	(%)	n	(%)	n	(%)
Critical	9	(69.2)	16	(88.9)	25	(80.6)
Not critical	4	(30.8)	2	(11.1)	6	(19.4)
Total	13	(100.0)	18	(100.0)	31	(100.0)

Table 10.19 Why venture capital funds were critical by year of formation

	Prior to 1980		1980 onwards		Total	
	n	(%)	n	(%)	n	(%)
The company would not exist	3	(37.5)	13	(81.3)	16	(66.7)
Other	5	(62.5)	3	(18.8)	8	(33.3)
Total	8	(100.0)	16	(100.0)	24	(100.0)

Table 10.20 Why venture capital funds were critical by size of firm in employment terms

	Number of employees					
	1 - 25		26+		Total	
	n	(%)	n	(%)	n	(%)
The company would not exist	11	(91.7)	5	(41.7)	16	(66.7)
Other	1	(8.3)	7	(58.3)	8	(33.3)
Total	12	(100.0)	12	(100.0)	24	(100.0)

10.5.2 Additionality

In order to ascertain whether the venture capital provider was the only opportunity for investment finance for survey firms, respondents were asked whether they had approached this financier before seeking funds from any other source. Interestingly, eight firms (80 per cent) which claimed they would not be operating without venture capital funds, approached the venture capital institution before applying to any other source (Table 10.21). This indicates that the venture capital organisation was not a lender of the last resort for such firms, since other means of financing had not been explored. Nevertheless, sixteen respondents believed that they would not be operating currently without the risk capital supplied by venture capital firms. Further investigation of these firms revealed a slight regional variation. Nine companies (75 per cent) located in the South East of England maintained that the injection of venture capital finance was crucial, compared with seven firms (a lesser 58 per cent) operating in Scotland (Table 10.22). This difference should not be overemphasised since it may be a reflection of the availability of regional government assistance to firms located in Scotland. If this is the case, then venture capital organisations effectively may be

taking the place of government aid in the South East. It should also be noted that, although respondents stated that they would not exist without venture capital funds, some may have continued to exist in a different form; perhaps as subsidiaries of other companies, or having been sold at a loss. At the time of interview thirteen of the sixteen firms (81 per cent) were still independent, which may be due to investment finance received from venture capital providers.

Table 10.21 Why venture capital funds were critical by when firms approached venture capital providers

	Before other sources		With other sources		After other sources		Total	
	n	(%)	n	(%)	n	(%)	n	(%)
The company would not exist	8	(80.0)	5	(50.0)	2	(66.7)	15	(65.2)
Other	2	(20.0)	5	(50.0)	1	(33.3)	8	(34.8)
Total	10	(100.0)	10	(100.0)	3	(100.0)	23	(66.7)

Table 10.22 Why venture capital funds were critical by firm location

	South East		Scotland		Total	
	n	(%)	n	(%)	n	(%)
The company would not exist	9	(75.0)	7	(58.3)	16	(66.7)
Other	3	(25.0)	5	(41.7)	8	(33.3)
Total	12	(100.0)	12	(100.0)	24	(100.0)

The current performance of the above sixteen companies also indicates that their critical need for finance has been overcome, since fourteen respondents (88 per cent) perceived their firms to be in an expansionary phase of development. Only two respondents believed that

their business was in a static or declining state, and this was confirmed by the calculation of percentage growth in turnover per employee for the period 1984 to 1989. Therefore, the majority of firms which were struggling enterprises at an earlier stage, had managed to turn their fortunes around following an injection of venture capital finance by the time of the survey. That is not to say, however, that venture capital organisations should expect to sit back and reap the rewards of a successful investment. Only five of the sixteen companies surviving as a result of venture capital funds (31 per cent) were currently making a profit. The venture capital provider should play a nurturing role, offering additional financial support if necessary to take the company to a self-financing position. Thus, venture capital providers should be prepared to be sources of long term risk capital in order to have the best possible offering for public flotation or trade sale when exiting investee companies.

10.5.3 Risk capital

It would appear from the above evidence that some venture capital organisations in the United Kingdom have put their funds at risk. According to Table 10.23, eighteen of the 24 companies which believed the financiers had taken a risk with their capital actually manufactured high technology products, as defined in Chapter 7 (see also Appendix 10). This may result from the fact that research and development processes associated with high technology production are intrinsically more risk-bearing than with low technology goods. Table 10.24 gives some indication of the degree of risk associated with the venture capital investment as perceived by the respondents. Eight companies (50 per cent) estimating the degree of risk believed that the venture capital company could suffer a loss as a result of the

investment. As might be expected, marginally more higher technology firms maintained that the financier could incur a loss (six or 55 per cent of the higher technology firms compared with two or 40 per cent of the lower technology companies). The remaining eight companies responding to the question on the nature of the risk, considered that the venture capital firm had taken a calculated risk when making the investment; that is, the likelihood of success was considered greater than the possibility of failure.

Table 10.23 Whether venture capital organisations took a risk by technological sophistication

	High technology		Low technology		Total	
	n	(%)	n	(%)	n	(%)
Took a risk	18	(90.0)	6	(54.5)	24	(77.4)
No risk involved	2	(10.0)	5	(45.5)	7	(22.6)
Total	20	(100.0)	11	(100.0)	31	(100.0)

Table 10.24 Degree of investment risk by technological sophistication

	High technology		Low technology		Total	
	n	(%)	n	(%)	n	(%)
Calculated risk	5	(45.5)	3	(60.0)	8	(50.0)
Possible loss	6	(54.5)	2	(40.0)	8	(50.0)
Total	11	(100.0)	5	(100.0)	16	(100.0)

The willingness of venture capital organisations to address risk can also be investigated by considering whether survey firms received injections of venture capital funds at other critical stages in their

business operations. Table 10.25 demonstrates that thirteen firms overall received a further important tranche of investment capital, and twelve of these believed that the finance was received at a critical time. When asked to define in what sense the investment was critical, nine companies (75 per cent) again maintained that they would not be operating in their present form without venture capital funds. Therefore, in their own estimation a number of companies had been saved twice from bankruptcy, liquidation or takeover by the timely investment of venture capital finance.

Table 10.25 Whether most important injection of venture capital funds was critical by year of formation

	Prior to 1980		1980 onwards		Total	
	n	(%)	n	(%)	n	(%)
Critical	4	(80.0)	8	(100.0)	12	(92.3)
Not critical	1	(20.0)	0	(0.0)	1	(7.7)
Total	5	(100.0)	8	(100.0)	13	(100.0)

10.6 SUMMARY AND CONCLUSION

Recipients of venture capital funds tended to initiate contact, via an intermediary, with venture capital organisations. Very often firms had to apply to more than one provider of venture capital finance before they were successful. Further characteristics of recipients included being less than ten years old, pursuing passive business objectives and generally manufacturing higher technology products. Older companies were more inclined to be approached by purveyors of

venture capital funds, but were less likely to become recipients. Producers of lower technology goods felt cash-constrained, perhaps as a result of pursuing aggressive marketing strategies. There was little evidence that venture capital funds could be advanced quickly, especially when firms were not growing or were in a period of decline. There were also few perceived benefits in the attempts by venture capital organisations to 'add value' to their investments, but a number of younger companies received assistance immediately after start-up. Many small young firms believed that the receipt of venture capital finance was critical to their survival, and that the financiers were prepared to put their capital at risk.

It would appear that the onus has been on the potential recipient to actively and tenaciously seek venture capital funding ever since venture capital emerged as a notable source of investment funds in the early 1980s. This would seem logical given that the firm itself, rather than the venture capital organisation, would know when investment funds were required. However, venture capital is not a short term form of finance and cannot be compared with a typical application for a loan or overdraft from a bank. The venture capital provider should be investing in the future prosperity of the firm, as distinct from banks which are concerned with current performance. Effectively, venture capital organisations fulfil a shareholding role and, like any other investor, they should carefully research and select company shares with a view to seeing the investment grow. Therefore, it seems natural that the financier would get involved in some form of search process in order to target the firms most likely to grow. This type of activity could lead to accusations of the venture capital provider 'skimming the cream' of <u>current</u> investment

opportunities, rather than being concerned with more marginal investments. However, the firm does not have to be growing prior to the venture capital input, merely exhibiting the potential for growth. The nature of venture capital is such that the investor not only provides finance, but also takes a 'hands on' role in the running of the company in order to 'add value' to the investment. The survey evidence indicates that this is not the approach of the United Kingdom venture capital industry. Venture capital organisations have tended to approach older firms currently exhibiting positive growth levels. Perhaps the financiers were simply alerting older companies to the opportunity of venture capital funding and, coincidentally, these firms were performing well. If this were the case and venture capital organisations were actively marketing their services, then it might be expected that the vast majority of firms in the sample should have had some form of contact with such financiers. Nevertheless, over a quarter of the entrepreneurs in the sample indicated that they had neither approached or been approached by venture capital companies at any stage in the development of the firm.

It has been postulated that the 'hands on' investment style is required for high technology venture capital investments in particular. However, evidence indicates that United Kingdom venture capital organisations generally take a 'hands-off' stance and, therefore, it is not possible to differentiate them from other financiers on this point. The tendency towards a 'hands-off' style of investment may be due to the evolutionary nature of the United Kingdom venture capital industry. Unlike pioneering <u>individuals</u> in the United States, venture capitalists in the United Kingdom mostly operate in captive subsidiaries of existing financial institutions. These

organisations cannot afford to place an individual industrial specialist in each investee firm, neither in terms of the time available nor the cost of managing the investment. A very small number of respondents in high technology companies acknowledged that they benefited from the experience of the venture capital organisation during the phase immediately after start-up. Again, this could be a result of lessons learned by venture capitalists from early investment mistakes during the emergence of the industry. In an attempt to ensure that subsequent investment ventures did not suffer the same fate as earlier failures, some financiers may have become more involved with the investee firm during its early development stages. Nevertheless, a substantial number of venture capital organisations have chosen the different and, perhaps, easier option of investing in situations which did not require much involvement beyond the initial provision of funds. This is also evident in the level of equity required by financiers as a result of their investment. Mostly they obtained minority shareholdings, which meant that they were not required, or did not seek, to participate actively in the running of the company. This investment strategy would suit those founders reluctant to relinquish the major share of their enterprise.

Essentially, United Kingdom venture capital organisations appear to be looking for rapid, risk-free returns which exceed what they could earn with more traditional investment instruments. As a result, they target only 'sure fire' winners and comprehensively 'vet' applications for funds. However, the waiting period whilst applications are processed may be critical, a situation that can only become worse if the required finance is not then forthcoming. Thus, the venture

capital industry can be criticised for becoming too 'insititutionalised' in relation to the United States example, and too similar in nature to other available sources of finance. However, some survey firms considered that venture capital companies had taken a risk when making their investment, and a number believed they would no longer be operating without the injection of venture capital funds. It might be difficult to claim that the venture capital organisations are fulfilling an 'additional' financial role, since a number of these firms had not approached other financial sources at this critical survival stage. This statement notwithstanding, maybe these firms believed that they would be unable to raise investment capital from traditional financiers without further collateral. Perhaps the distinguishing aspect of venture capital funding in the United Kingdom is that it is investment without collateral. This is a different lending strategy from that pursued by other financial institutions which, in general, seek assurance that investment capital will be repaid in full with interest within a defined time period, even if the firm collapses.

Chapter 11

CONCLUSIONS AND RECOMMENDATIONS

11.1 INTRODUCTION

The introduction to this thesis specified that the principal purpose of this research was the investigation of the nature of venture capital provision in the United Kingdom when compared with the United States example. This approach has resulted in the formulation of a model of typical United Kingdom venture capital organisation behaviour. This model, supported by empirical evidence from preceding chapters, will be presented later in this chapter, followed by a consideration of the future implications for venture capital practice and the formulation of policy. Areas for possible future research are also considered.

It should be noted in interpreting the results of this thesis that social science research takes place in a dynamic environment and, consequently, the following conclusions and recommendations are based upon a discussion of empirical results and theoretical issues within the framework of economic and political circumstances current at the

time of completion of this thesis (December 1991). There now follows a brief overview of the major findings of this study in order to act as a contextual basis for subsequent sections of this chapter.

11.2 MAJOR FINDINGS

This section contains the major findings of the five preceding empirical chapters.

11.2.1 Investigation on the main source of start-up capital revealed that:

- The main source of start-up capital for the majority of survey firms was internal

- The use of external start-up capital has become more prevalent in recent years

- Externally funded start-ups generally gained access to larger amounts of finance than internally funded start-ups

- Survey firms did not appear to associate their particular financial need with a particular type of capital

DISCUSSION

Chapter 6 demonstrated that, although the main source of start-up capital for the majority of survey firms proved to be of internal origin, an increasing percentage of firms founded since 1960 have adopted external capital as their main start-up source. One advantage of externally-sourced finance is the larger amounts of capital that may be made available to the founder when compared with internal sources. However, survey firms utilising external capital may be subjected to unnecessary financial strain because they tend to adopt unsuitable forms of finance for their requirements; for example, using overdraft facilities to finance the purchase of fixed assets, and term loan finance to fund working capital needs (see Chapter 6). There was little evidence that, having identified the need for external capital, survey firms made a considered decision on the particular type of capital required.

11.2.2 Consideration of the process of application for, or offer of, venture capital funds indicated that:

- Recipients of venture capital funds tended to be younger survey firms (founded since 1980) which actively sought investment finance from venture capital providers

- Older survey firms were more inclined to be approached by purveyors of venture capital funds, but were less likely to become recipients

- It was common for eventual recipients of venture capital funds initially to be refused this type of finance from more than one source of venture capital funds

DISCUSSION

Chapter 10 investigated the market mechanism for the delivery of venture capital finance to the survey firms; that is, whether venture capital organisations actively sought investment opportunities, or whether survey firms initiated contact with the financiers. Interestingly, age played an important part in the application for, or offer of, venture capital funds. Older survey firms tended to be approached by venture capital organisations with a view to becoming potential recipients. However, these older survey firms were not inclined to take up the offer of venture capital finance. On the other hand, many younger survey firms became recipients of venture capital funds after having sought the finance from several venture capital sources. In addition, these firms were not put off by initial refusals to their applications for venture capital funding.

11.2.3 Investigation of the factors involved in attracting venture capital funds revealed that:

- Firms without formal business plans initially tended to contact venture capital organisations via an intermediary, and were largely successful in obtaining venture capital funds

- The qualifications and experience of the management team did not seem to have any bearing on ability to attract venture capital funding

- Recipients of venture capital funds generally pursued passive business objectives, displayed a greater propensity to be 'higher technology' as measured by R&D inputs, exhibited a higher rate of turnover and employee growth and displayed a stronger exporting orientation than their older non-adopting counterparts

- Firms which were aware that the venture capital investment involved more than just the injection of capital tended to be in receipt of venture capital funds

DISCUSSION

The role the business plan played in attracting venture capital funds was investigated in Chapter 8 which revealed that this document was not essential to the receipt of venture capital funds. Intermediaries played an important role by recommending to venture capital providers survey firms without business plans as possible investment opportunities. In addition, Chapter 8 demonstrated that the experience of the management team did not appear to be the prime investment criterion applied by venture capital organisations. This is despite the fact that venture capital organisations state that management is the most important factor in the investment equation. Chapter 7 detailed the characteristics of firms in receipt of venture

capital finance, and these included a strong orientation towards exporting. This implies that the market criterion might be a more important factor when venture capitalists are deciding which projects to finance. Other factors involved in attracting venture capital organisation interest were identified in Chapter 10. These included the fact that survey firms demonstrating an awareness of the non-financial aspects of the venture capital investment, like the appointment of a non-executive director, tended to be in receipt of venture capital funds. However, the direction of the cause and effect in this relationship remained unclear.

11.2.4 An exploration of the adoption of venture capital funds and its relationship to control of the enterpise revealed that:

- Some companies did not make use of venture capital funds because they believed this would lead to a loss of control of their enterprise

- Many survey companies were able to maintain their independent status where the largest and, in some cases, majority shareholding was in the hands of venture capital organisations

- No association was found between receipt of venture capital funds and whether the main founder was still employed in the company

- Venture capital organisations did not always make their intentions explicit with regard to how the investment would be realised

DISCUSSION

Chapter 9 considered what effect the perception of ownership and control of the survey firm would have on the propensity of entrepreneurs to adopt venture capital funding. Generally, entrepreneurs who were concerned about ownership and/or control chose not to adopt venture capital finance. However, this concern appears unfounded given the evidence that a number of survey firms maintained their independence even where venture capital organisations owned the majority shareholding. A potential reason for concern over ownership and/or control is that venture capital organisations in the United Kingdom tend to place the emphasis on trade sales rather than flotations when realising their investments.

11.2.5 A consideration of 'hands-on' management of venture capital investments suggested that:

- Many venture capital organisations appointed, or reserved the right to appoint, a director to the board of management of the investee firm

- These directors intitiated a limited number of strategic and managerial changes in investee firms

- There were few perceived benefits by survey firms in the attempts by venture capital organisations to 'add value' to their investments

- A number of Scottish survey firms had received venture capital funds from financiers based in the South East of England

DISCUSSION

Chapters 9 and 10 investigated the extent of the 'hands-on' contact between recipient firms and venture capital organisations. Generally, venture capital organisations believed that non-executive directors would be able to fulfil the 'hands-on' management role. However, where these directors were appointed, few survey firms reported that strategic or management changes resulted from the relationship. Most survey firms in receipt of venture capital funds stated that the finance itself was the only advantage of venture capital involvement. They did not believe that the venture capital organisation, or its appointed director, brought 'added value' to the investment. The one advantage of this 'hands-off' role is that venture capital organisations are able to invest on a remote basis. Indeed, as Chapter 7 illustrated, a number of venture capital organisations located in the South East of England had made investments in Scottish-based firms.

11.2.6 Investigation of the significance of venture capital funding led to the observation that:

- Many small young firms believed that the receipt of venture capital funds was critical to their survival, and that some venture capital organisations would, as a result, lose the capital they had invested

DISCUSSION

Despite the evidence that venture capital organisations invest little more than money and, thus, appear similar to other financial institutions, Chapter 10 ascertained that they adopt a high risk profile by investing without taking collaterol. A number of investee firms believed that the venture capital organisation would make a loss by investing in them, and that no other financial institution would have provided investment funds in these circumstances. However, it is debatable whether venture capital organisations would risk losing their investments quite so much if they chose to adopted a 'hands-on' management role.

11.3 IMPLICATIONS FOR THEORY

In order to discuss the implications of this research for theory, it is necessary to construct a 'classical' model of venture capital behaviour. Chapter 4 has already hinted at the form this model should take based on the example of past venture capital providers in the United States. The purpose of this section is to demonstrate that modern-day venture capital providers in the United Kingdom and, to a

certain extent, the United States (see Chapter 4, Subsection 4.4.2), are attempting to reproduce the results of a 'classical' venture capital model whilst adopting a fundamentally different approach. This conclusion will seek to argue that such an expectation is unrealistic, with significant implications for theory, practice and policy.

11.3.1 The 'classical' model of venture capital behaviour

A typical example of the 'classical' venture capitalist form would be a successful ex-entrepreneur who invests his own capital in a new venture which is seeking to exploit the application of a particular technology. This new company is often founded by an entrepreneur spinning-off from another company. The venture capitalist invests capital in return for equity for an indeterminate period of time. The venture capitalist then becomes actively involved in helping the business to grow, utilising his own entrepreneurial experience and business contacts to assist management in the first instance, and possibly taking full control in the medium term. The investment is long-term with the venture capitalist only realising a return when the business becomes a viable prospect for public flotation or trade sale. The return on investment can be substantial because of the early involvement of the venture capitalist. The key catalysts for growth are participation, long-termism, risk and business development. The venture capitalist is prepared to invest at the risk of not regaining his original investment. This risk is reduced by the financier becoming actively involved in the investee company through good times and bad. There is the possibility that two venture capitalists will

emerge from the relationship; the original venture capitalist, and the newly successful entrepreneur who wishes to become involved in future new technology-related ventures.

11.3.2 The United Kingdom experience of venture capital provision based on empirical evidence

Venture capital personnel in the United Kingdom and, to a growing extent, in the United States are financial experts managing mainly institutional funds. These financial experts typically invest in existing companies at a later stage in their development when compared with the 'classical' venture capitalist. The investment takes the form of part equity, part loan over a fixed period of time. These fund managers do not become actively involved in the operations of the investee company, although they may recruit an additional member to the management team of the company if they feel a particular area of expertise is lacking. Generally, they appoint a representative to the board of management, or reserve this right for the future. The venture capital investor provides the investee firm with a list of potential business contacts, and the onus is on the investee firm to pursue the contacts on this list. This form of investment tends to be short-term for two main reasons; first, the venture capital investor receives a regular return on the investment in the form of interest payments on loans or dividends on preference shares; second, these later-stage investments realise a return more quickly than early-stage investments. The emphasis for realising the investment is on trade sales rather than flotations, however, management buy-outs tend to involve a share buy-back agreement. In this United Kingdom example the key issues are lack of participation and short-termism, whilst incurring as little risk as possible in managing the investment fund.

Such criteria are achieved by investing in later-stage ventures where there is an experienced management team requiring little management input by the venture capital organisation, but where the potential for a substantial return on investment is reduced. Moreover, in the United Kingdom case, there is little or no possibility of any new venture capital investor emerging from the relationship.

11.3.3 Critical comment on the model adopted by United Kingdom venture capital organisations

It is clear from the above evidence that the model the United Kingdom venture capital industry has adopted is diametrically opposed to the 'classical' venture capital model. Table 11.1 itemises certain components of venture capital investment behaviour in order to illustrate the critical differences between the 'classical' model and the United Kingdom reality.

Table 11.1 Comparison of the 'Classical' Model of Venture Capital Behaviour and the United Kingdom Reality

	'Classical' Model	United Kingdom Reality
Investor expertise	Technical and financial	Financial
Stage of involvement	Early	Later-stage
Type of finance	Equity	Combined equity/loan
Length of investment	Long term	Short term
Type of management	Hands-on	Hands-off
Level of risk	High	Low
Venture capitalist spin-off	Spawns new venture capitalists	No spin-off venture capitalists

It is not surprising, given the evidence of Table 11.1, that United Kingdom venture capital organisations have been unable to replicate the spectacular early investment successes of Digital Equipment Corporation, Apple Computer, Compaq and so on. In order to produce the same investment success 'effects' it is necessary to implement the same basic causal mechanisms such as long term, high risk, participative investment. Whilst it must be acknowledged that a very small number of United Kingdom venture capital organisations follow the 'classical' model of investment behaviour, these 'classical' style venture capital operations are the 'exception rather than the rule.' Most United Kingdom venture capital organisations follow the 'United Kingdom reality' form of Table 11.1. However, there are functional problems in calling the two phenomena listed in Table 11.1 by a common name. The implications for policy section of this chapter discusses these problems and proposes a solution.

One reason for the popular use of the term 'venture capital' might be an attempt to associate the United Kingdom industry with the spectacular investment successes of the United States in the 1970s and early 1980s. However, United Kingdom venture capital organisations have taken proven 'ingredients' and substituted others for economic reasons, principally, to satisfy the short-term returns required by the financial institutions supplying the investment funds to the industry. These 'ingredients' have also been changed for political reasons, with a number of high street banks establishing venture capital subsidiaries in order to address the problem of the 'equity gap' identified by the Wilson Report. The banks sought to fill this gap in a structural sense by making small amounts of finance available to small businesses. Inevitably, however, these captive venture

capital organisations adopted many of the lending characteristics of their parent banks, principally, financial experts seeking to minimise both risk and involvement in investee companies. Therefore, the banks failed to fill the equity gap in a physical sense. It is paradoxical that many of the providers of finance to the United Kingdom venture capital community have become disenchanted recently with the poor performance of venture capital investments, when these investments cannot be termed venture capital in the 'classical' sense.

11.4 IMPLICATIONS FOR PRACTICE

The following implications for practice specifically focus on the above empirical model of venture capital behaviour and a number of research findings directly relevant to the hypotheses posed in Chapter 5 of this thesis. The purpose of this section is to recommend possible actions to encourage venture capital investors and small high technology manufacturing firms to establish a productive and mutually beneficial investment relationship.

The evidence of this thesis is that entrepreneurs frequently do not access the most appropriate type of capital for their particular need. This implies that organisations are making use of other, perhaps short-term, forms of finance when longer-term equity-based venture capital funds might be more appropriate. Entrepreneurs wishing to maintain small businesses, or grow within internally-generated means, should not seek funds from venture capital organisations whose main objective is to accelerate the growth of investee companies. Businesses seeking moderate or fast-growth should be more willing to

concede equity to outside investors since this research has shown that United Kingdom venture capital providers generally require the largest or, in some instances, major share of equity. Concern about control of the enterprise was expressed by a number of company founders in the United Kingdom, but even where venture capital organisations possessed the majority shareholding most entrepreneurs maintained that they operated independent businesses.

The concentration on consumer product/service industries and later-stage investments means that organisations operating in the United Kingdom venture capital industry are little differentiated. Later-stage investments are considered prudent by the venture capital community which is attempting to safeguard existing capital committed by their investors, primarily pension funds, and attract additional investment funds in future. However, the venture capital organisation seeking phenomenal returns should be looking to invest at an early stage in the development of a company and, as a result, obtain investment capital not from institutional investors but from individuals who are willing to put their own money at risk. Some early-stage investment successes might encourage more venture capital organisations to differentiate their services. Currently, there is some evidence that venture capital providers are attempting to differentiate their services by targeting quoted companies (Batchelor, 1990e). This investment strategy will further limit the amount of capital available for small unquoted early-stage ventures. Although the venture capital industry should be commended for actively seeking new investment opportunities, questions should be asked as to whether firms following the quoted company, and the later-stage, investment option can be termed true venture capital organisations.

One of the most surprising findings of this thesis is the extent of venture capital funding in Scottish electronics companies sourced from financiers in the South East of England. However, this investment on a remote rather than local basis has been facilitated by the fact that United Kingdom venture capital organisations tend to pursue a 'hands-off' investment strategy, which means that frequent contact with the investee company is not necessary. This is in direct contrast to the 'classical' United States example where 'hands-on' contact is maintained due to the concentration of venture capitalists around 'hives' of entrepreneurial activity, and the highly integrated networking process between individual venture capital investors. Thus, a local venture capitalist can act as lead investor in a syndicate of more distant investors. Although there is evidence in this study of networking between United Kingdom venture capital organisations, it has not evolved to the same extent as the United States example. Whilst this may be a reflection of the relative youth of the United Kingdom industry, it seems more reasonable to assume that the 'hands-off' investment stance releases United Kingdom venture capital investors from the need to collaborate, thus negating the opportunity to 'add value' to their investments.

Venture capital providers can argue that a 'hands-off' investment strategy gives them the opportunity to invest in a larger proportion of the industrial population. Investing across a number of different industrial sectors spreads the risk, but it could lead venture capital personnel to become 'jack of all trades, master of none' so that they do not have the specialist knowledge to 'add value' to their investments. Of course, venture capital organisations have an obligation to their shareholders or parent companies to perform as

well as they are able, which is the justification for pursuing short-term returns with multiple investments in popular industrial sectors. However, until the United Kingdom venture capital industry as a whole attempts nurturing and 'adding value' to its investments, there is still the question of whether a smaller number of long term focused investments will yield a higher overall return. One problem with the change to a more nurturing investment strategy is the effect this would have on the perception of control by founding entrepreneurs; that is, a 'hands-on' role might be considered interfering and a threat to their control of the enterprise.

Interestingly, this research found that an impediment to the adoption of venture capital funds by entrepreneurs which had no contact with venture capital providers was not the issue of control, but rather the fact that firms preferred to make use of capital from a range of other financial sources. This implies that the terms and conditions associated with venture capital funding compare unfavourably with other financial instruments, and firms which are unable to obtain any other form of finance may be at a disadvantage in adopting venture capital funding. However, most firms would rather operate under less favourable conditions than go out of business, and a number of survey companies stated that they owed their present existence to the investment of venture capital funds. This indicates that some venture capital organisations are prepared to put their money 'at risk,' and this is what distinguishes venture capital funding from bank finance in the United Kingdom. Even though banks have become more aware of their small business customers over the last decade and now offer

information and assistance as part of their investment package, they are still constrained by the fact that they require loans to be secured against business or personal assets.

Unlike the United States, there is no tradition in the United Kingdom of successful venture capital investments in early-stage high technology ventures. The United Kingdom needs some successful examples of United States-style early stage investments, with the emphasis on 'hands-on' management and adding value through good times and bad, in order to convince the venture capital industry that they are worthwhile. Given the example of the United States in the 1970s (see Chapter 4, Subsection 4.2.1), the present recession may force venture capital organisations to maintain their investments and work with investee companies until times are better and significant returns can be achieved. However, there may not be enough venture capital organisations currently holding on to, and working with, their early-stage high technology investments in order to have a chance of any showing significant returns within the next five to ten years.

Perhaps what is required to change this situation is some sort of paradigm disruption. For example, a sudden upsurge in 'business angel' activity may encourage a sudden upsurge in 'classical' style venture capital activity. If the 'business angel' community, either in the United States or the United Kingdom, demonstrates some initial investment successes this might encourage United Kingdom venture capital organisations to invest more actively in early-stage ventures. This prognosis is not unreasonable, given the fact that United Kingdom

high street banks became newly interested in small firms, and renewed their interest in venture capitalism, as a result of competition from the emerging venture capital industry.

11.5 IMPLICATIONS FOR POLICY

It would appear that the government is playing a decreasing direct role in the development of important high technology industrial sectors. Specifically, the operations of the public sector organisations and initiatives formed to provide, in effect, venture capital funds gradually have been reduced in effectiveness over the last ten years. This strategy would not be out of place if the private sector and, in particular, the venture capital industry filled the role of providing risk capital for innovative projects involving new and growing small high technology companies. However, the fact remains that the costs and risks of providing finance to small firms are higher than for larger enterprises, regardless of the source of the capital. The nature of a free market dictates that more marginal investment projects will be neglected in favour of opportunities involving less risk which, in turn, provide a better chance of achieving a quick return on the capital invested. This has resulted in the United Kingdom venture capital industry concentrating on later-stage investments rather than considering the more risk-bearing seed capital and start-up projects. Moreover, the recent development to provide venture capital funds to smaller quoted firms whose shares are traded on the Unlisted Securities Market (USM) or the full stock market looks like diverting much needed investment capital away from unquoted companies. This modification is in direct contravention to

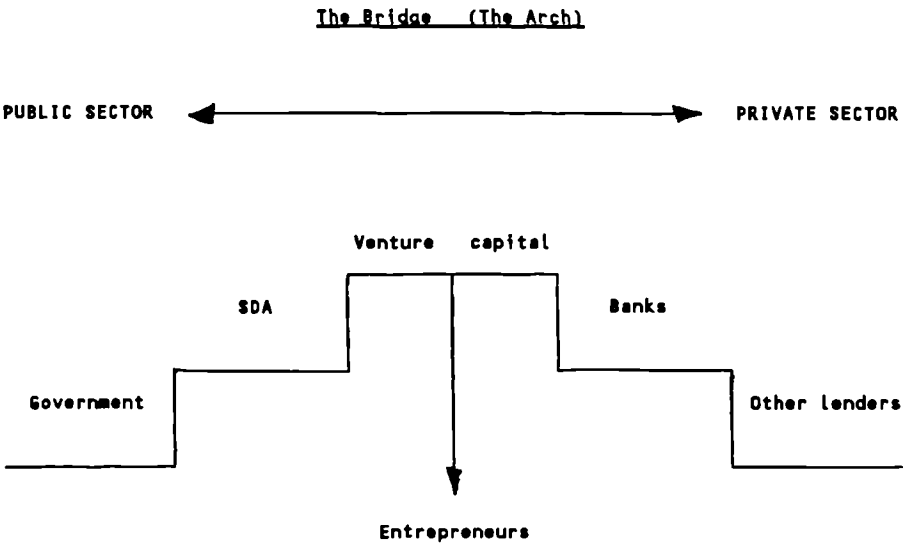
the findings of the Macmillan, Radcliffe, Bolton and Wilson Reports, discussed in Chapters 2 and 3, which recommended the promotion of sources of equity finance for unquoted companies.

The British Venture Capital Association (BVCA) has called for the government to play an increasing role in the funding of company start-ups, since these investments are not particularly favoured by the venture capital community:

> "The BVCA is concerned at the lack of funds available for start-up early stage companies. It has set up a committee which, as part of its role, needs to persuade the Government to rethink its approach to start-up capitals. Many people now appreciate the difference between venture capital (start-up or near start-up situations) and development capital (which all too often now just means management buy-outs!) As the BVCA statistics show, less money is being put into start-up situations and it is this area into which Government assistance should be channelled," (Dodwell, 1989, p6).

Government bodies could interact with the private venture capital sector, picking up marginal investments which are worthwhile in terms of future economic development and then passing these projects on at a later stage when they become of commercial interest to the private sector. John Laydon of the Scottish Development Agency, or Scottish Enterprise as it is now known, approached this argument from a different angle, hinting at the role venture capital providers might play in bridging the gap between the public and private sectors (see Figure 11.1). Thus, venture capital organisations should be looking to invest in opportunities before they become obvious candidates for more traditional sources of finance, like bank funding or public share issues.

Figure 11.1 Public/private sector investment bridge



Source: Laydon (1988)

However, too much emphasis on short-term 'hands-off' later-stage deals has led to accusations that there are only about ten to twelve true venture capital organisations operating in the United Kingdom; that is, companies which are prepared to invest in the form of pure equity and participate extensively in high-risk investee companies. Investments in quoted companies will surely lead to further allegations that venture capital institutions are losing sight of the venturing objective. The British Venture Capital Association has been an active player in convincing members of the benefits of investing on a more geographical basis, therefore, there may be scope for the British Venture Capital Association liaising with the government to ensure that true, or 'classical' style, venture capitalism is not lost to the operations of the free market. This might entail the

reorganisation of the United Kingdom venture capital industry to better distinguish between true venture capitalists and organisations more concerned with the provision of later-stage development capital.

True venture capital providers are able to play a unique role in relation to other financial services. Although the terms and conditions of venture capital finance may not always compare favourably with these other forms of finance, the investment can be sold on the basis that it combines unsecured long-term capital with expertise in the form of an individual who will work with the entrepreneur to add value to the company for their mutual benefit. What is required are a larger number of small specialist venture capital operations run by people with industrial and financial expertise according to the 'classical' model. This would be preferable to the current small number of general venture capital companies operated mainly by financial experts who attempt to spread their investment attention too thinly and which have become, essentially, investment houses by another name. In addition, venture capital organisations should become more involved in marketing their services and identifying potential recipient firms.

In more general financial terms, there might be scope for extending the recent government study on bank lending practices and small firms in order to evaluate the overall financial provision for this important sector of industry given the recent expansion in numbers of small businesses. Such an investigation is appropriate at this point in time, since many companies will have been encouraged to borrow to their limit during the boom years only to be hit by high interest rates during the present recession. The increased reliance on private

sector monies during the enterprise years of the 1980s can only have served to exacerbate the financial problems of a number of small firms which, instead, might have received non-repayable government funds in the past. Therefore, the proposed government study should determine what current mechanisms are in place in both the public and private sectors to limit the financial difficulties of small companies which, perhaps through no fault of their own, find themselves on the brink of bankruptcy.

11.6 RECOMMENDATIONS FOR FUTURE RESEARCH

A 'snapshot study' of such a fluid topic of interest has its limitations and so it would be enlightening to conduct a follow-up survey of the firms involved in this research. Such an investigation would allow a picture to be formed of the movement of venture capital funds within the high technology study industry. Non-adopters may have become recipients in the meantime and existing investments may have matured or even failed. A follow-up study would also offer the opportunity to observe how the companies have weathered the recession and whether their relationship with venture capital providers has been affected as a result. Of course, the investigation should take account of the position of venture capital organisations during the economic downturn.

It would also be useful to study some high technology companies in greater detail in order to observe their interaction with financiers in general, and venture capital organisations in particular. It might be possible to monitor the entire venture capital investment process,

from the initial application for venture capital funds to the exit at the end of the investment period. This would involve regular in-depth qualitative interviews with investee and investor companies over a protracted period of time, and could add insight to the relationship between the two parties.

A further area of future research could involve studying business angel activity in both the United States and the United Kingdom. Given the convergence in investment strategies by the venture capital industries in both countries, it would be interesting to monitor the investment activity of business angels in this respect. In addition, the study could determine whether the business angels of today are the original venture capitalists of yesterday. It is most likely the case that these informal investors have always been around, but the institutionalisation of venture capital activity adulterated the original concept of venture capitalism. Therefore, the term 'business angel' was adopted to differentiate traditional venture capital investments from institutionalised venture capital activity.

Given that this thesis has recommended more emphasis on 'hands-on' venture capitalism, this could have implications for the growing number of cross-border venture capital investments; that is, investments made in one country by a venture capital organisation located in another country. It would be interesting to investigate whether cross-border investors actively involve themselves with their investee companies. The financiers might instal specialists in several countries and attempt to make this worthwhile by financing a reasonable number of companies in each, or they could establish a networking process with a number of like-minded venture capital

organisations in countries of interest. Research into this area, however, may find that venture capital organisations involved in cross-border investments concentrate on 'hands-off' later-stage deals to limit the need for personal contact and collaboration between financiers.

Finally, it would be worthwhile to investigate the performance of different types of venture capital providers in the United Kingdom. This involves identifying and selecting venture capital institutions which pursue fundamentally different investment strategies. For example, venture capital organisations which invest patient money and expertise in new or almost new ventures; venture capital organisations which advance capital and little else to more mature companies over the short term; and venture capital funds which focus their attention on the quoted investment sector. Thus, it might be possible to evaluate the relative success of the above three investment strategies in order to determine which constitutes 'best practice.' It is anticipated that the results of such a study would build on the findings of this thesis, and could have significant implications for the future development of policies aimed at ensuring an optimum and effective United Kingdom venture capital industry.

Appendix 1

COMPARISON OF THE THREE FINANCIAL MARKETS

COMPARISON OF THE THREE FINANCIAL MARKETS

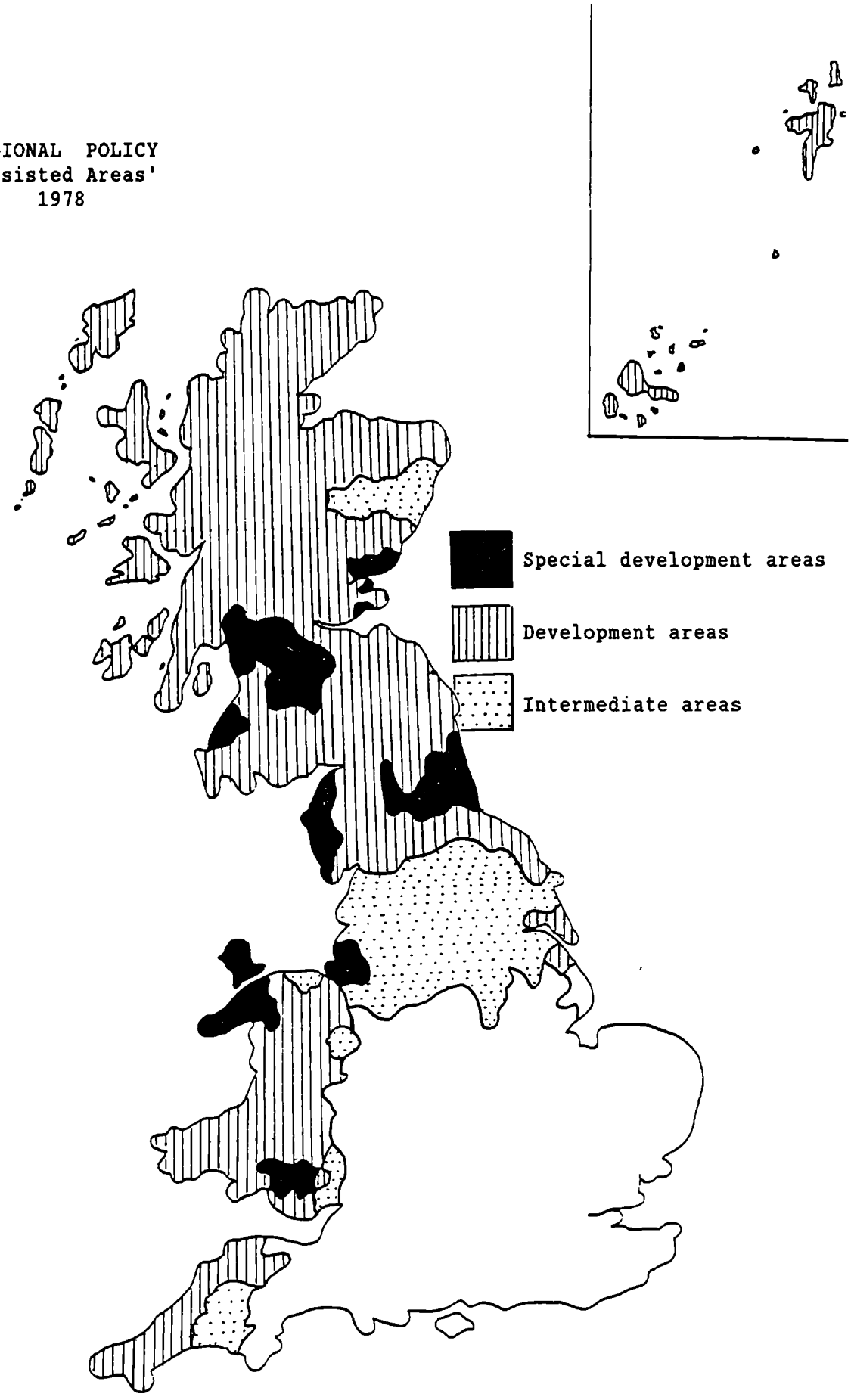
ISE markets: comparison of levels of entry			
	Official List	**USM**	**Third Market**
Minimum market capitalisation	£700,000 for equities (but normally sponsors look for companies over £10 million for market liquidity and cost reasons)	No minimum	No minimum
Minimum trading record	3 years	2 years	Usually 1 year
Annual turnover of company	No minimum but sponsors normally look for £10 million	No minimum but normally over £500,000	No minimum
Minimum percentage of shares which must be publicly held	25%	10%	No minimum
Latest audited results in prospectus	Within six months	Within nine months	Usually within nine months unless a greenfield company
Threshold percentage for circulars to shareholders on acquisitions and disposals after flotation	15% of the assets or profit before taxation or equity being issued	25% of the assets or profit before taxation or equity being issued	No threshold but recommended at 25%
Publicity requirements: introductions and placings	One formal notice in a national daily newspaper and circulation of listing particulars in the Extel Statistical Services	One formal notice in a daily newspaper and circulation of prospectus in the Extel Statistical Services	One formal notice in a daily newspaper and circulation of prospectus in the Extel Statistical Services
Publicity requirements: offers for sale	Listing particulars to be published in two national daily newspapers and circulated in the Extel Statistical Services	One formal notice in a daily newspaper	One formal notice in a daily newspaper

Source: ISE (1988/89)

Appendix 2

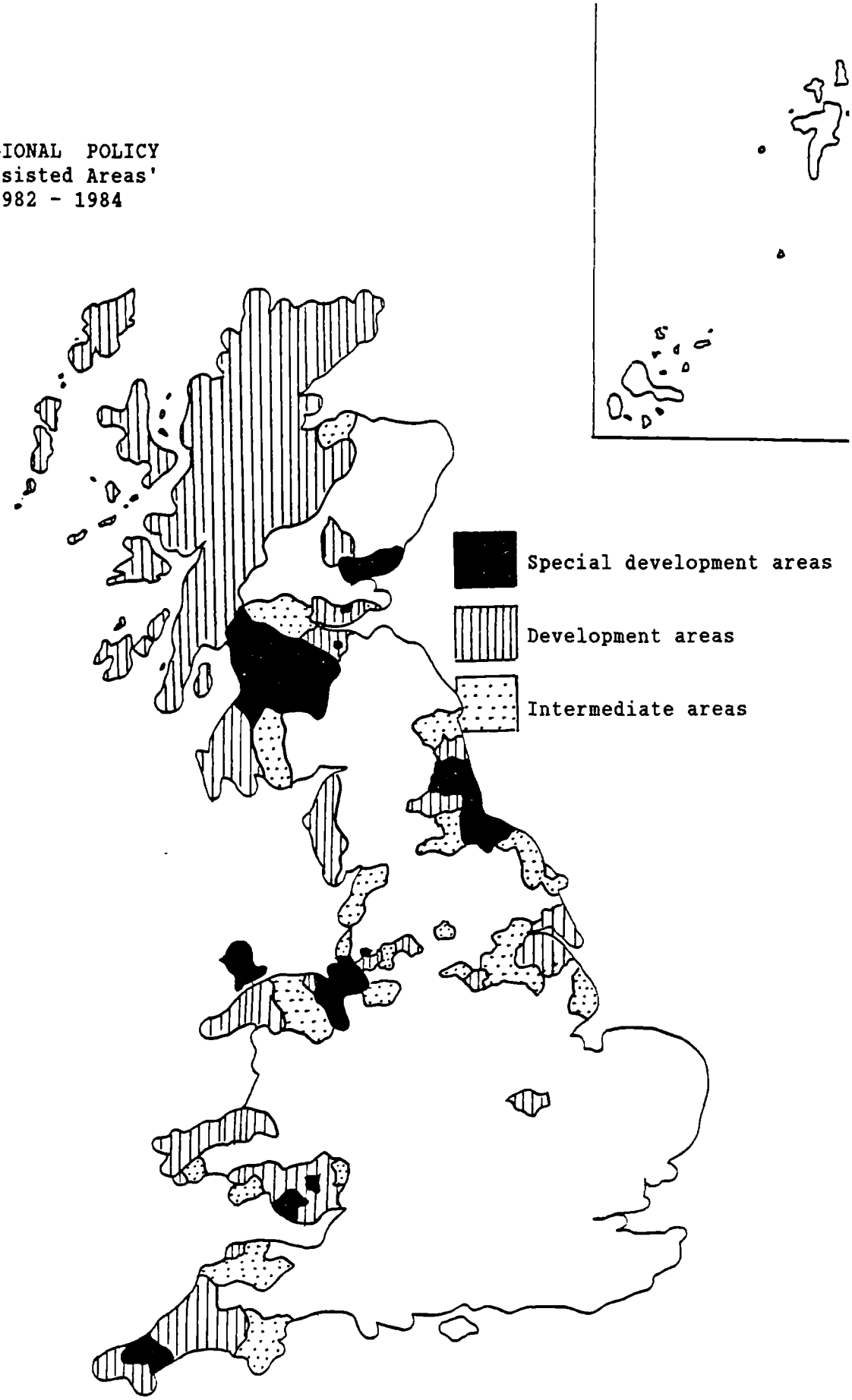
ASSISTED AREAS FROM 1978 ONWARDS

REGIONAL POLICY
'Assisted Areas'
1978



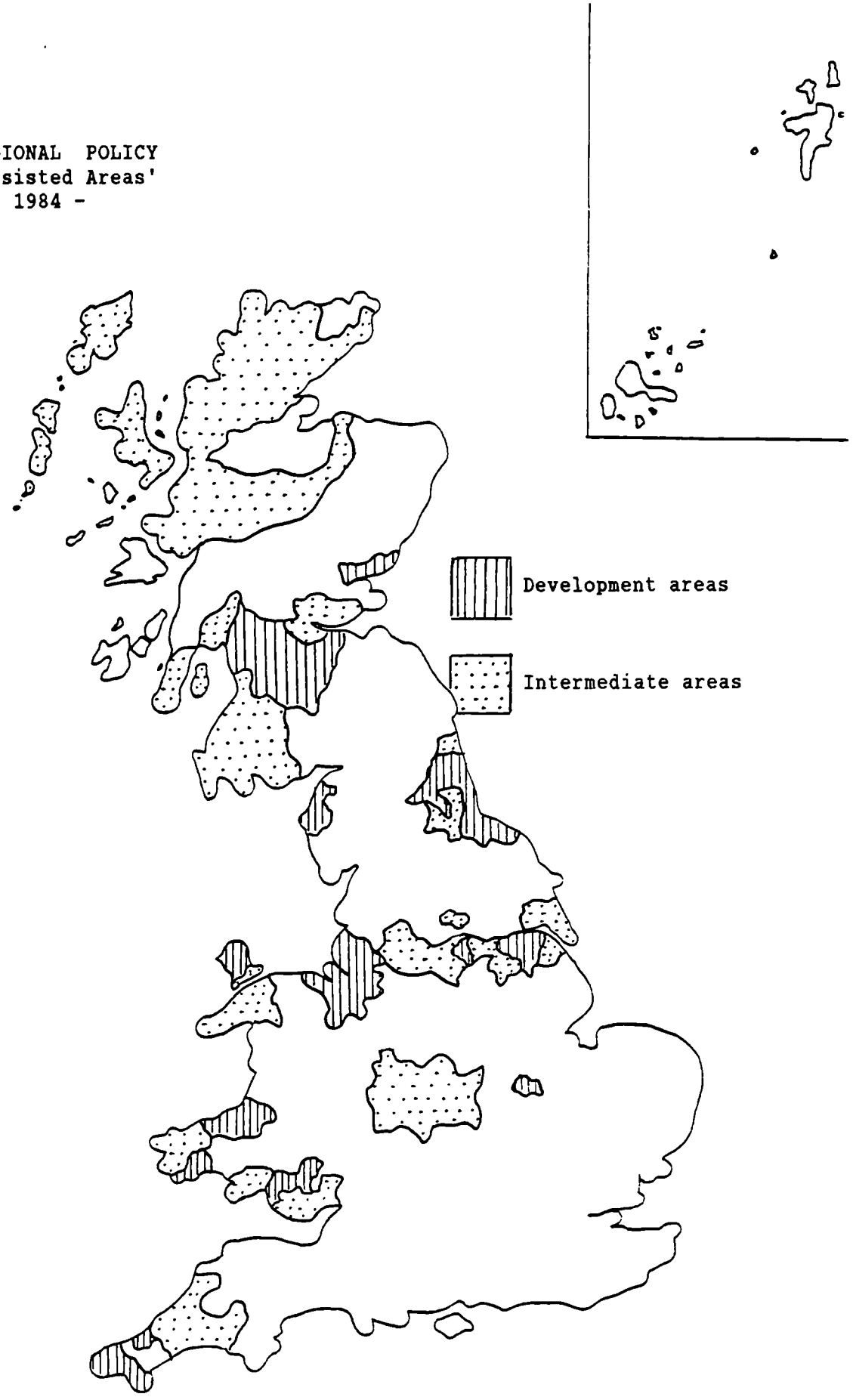
Source: Law (1980)

REGIONAL POLICY
'Assisted Areas'
1982 - 1984



Source: Townsend (1987)

REGIONAL POLICY
'Assisted Areas'
1984 -



Source: Townsend (1987)

Appendix 3

THE PERSONAL INTERVIEW QUESTIONNAIRE

THE IMPACT OF VENTURE CAPITAL ON SMALL HIGH TECHNOLOGY MANUFACTURING FIRMS

CODE NO. [ ]

Name of firm: _____

_____

Address: _____

_____

_____

_____

Sort of site: _____

Telephone no: _____

Name of contact: _____

Position of contact: _____

Date of interview: _____

1 ORIGINS OF THE FIRM

1 In what year was this firm founded?

_____

2 What was the main trigger for the establishment of this firm?

_____
_____
_____

3 How many people were involved in the founding of this company?

_____

4 Did the main founder have any formal academic qualifications at the time of founding?

1 - no
2 - yes Highest qualification held at founding _____
_____

5 Does the main founder still work for this firm?

1 - no
2 - yes Position currently held _____
_____

6 Before the establishment of this venture, was the principal founder

1 - employed by someone?
2 - self-employed?
3 - unemployed? GO TO Q.9
4 - a student? GO TO Q.9

7 Prior to beginning this firm, did the main founder work in the same area of business?

1 - yes
2 - no

8 Please give details of the main founder's previous business and the position held:

_____
_____
_____

9 Was the main previous work experience of the principal founder in:

1 - business management expertise?
2 - technical expertise?
3 - both of the above?
4 - other? _____

10 Upon the establishment of this firm, what percentage share of ownership was held by the main founder?

_____

11 At the time of founding, what were the main business goals of this firm?

_____
_____
_____
_____
_____

2 ACQUIRED OR INDEPENDENT?

12 Since formation, has this firm been acquired by another company, or does it remain totally independent? (Totally independent means effective control of this firm is held by the Board of Directors on this site).

1 - acquired
2 - independent GO TO SECTION 3

13 In what year was this firm acquired?

_____

14 Please indicate the main reason for the acquisition. (Please include main attitudes of both acquiring and acquired firms).

a) ACQUIRED _____
_____

b) ACQUIRER _____
_____

15 Please give name and location of parent company:

Name _____
Location _____
_____
_____

16 Please give the parent company's percentage share of this firm's total equity:

EXACT %

1 - 51-74 _____
2 - 75-99 _____
3 - 100 _____

17 Where are financial decisions concerning this firm primarily made?

1 - this firm
2 - parent company

3 CHARACTERISTICS OF THE FIRM

18 Is this company:

1 - expanding rapidly?
2 - expanding steadily?
3 - static?
4 - declining?

19 What functions are the Board members, who are also full-time employees, responsible for in this firm?

FUNCTIONS

_____
_____
_____
_____
_____
_____
_____
_____
_____

20 Who has the largest shareholding in this firm?

	AMOUNT
_____	_____

21 How many people are involved in the management team of this firm?

_____

22 How many of the firm's current management team have been involved in the management of

(A) other firms in the same industry? _____
(B) other firms in dissimilar industries? _____

23 What is the main product of this firm (ie the product which contributed most to turnover in the last financial year)?

_____

24 Was this product

1 - developed through 'in house' R & D?
2 - obtained from an external source? Form of the technology transfer? _____
_____
_____

25 Where are your customers <u>predominantly</u> located?

_____

26 Could you estimate the percentage of sales dispatched to

	%
1 - private industry?	_____
2 - the government sector?	_____
3 - the final consumer market?	_____

27 Which of the following categories would you say your firm's <u>main</u> product (as described in Q.23) falls into?

1 - an imitation of a product already available on the market
2 - an improvement to an existing product manufactured by this firm
3 - a totally new product previously unavailable on the market

28 What was the <u>main</u> reason for the development of this type of product innovation?

_____
_____
_____

29 What degree of risk to your firm would you attach to the following strategies (on a scale of 1 to 5)?

	SCALE 1=LOW to 5=HIGH
1 - an imitation of a product already available on the market	_____
2 - an improvement to an existing product produced by this firm	_____
3 - a totally new product previously unavailable on the market	_____

Comments: _____

_____

_____

_____

_____

30 Has the company ever <u>seriously</u> considered a new product innovation and not proceeded with it?

1 - no **GO TO SECTION 4**
2 - yes Please give details _____

_____

_____

31 What was (were) the <u>main</u> reason(s) for not proceeding with this product innovation?

_____

_____

_____

_____

32 Has another firm subsequently developed a product innovation of similar specification (to that mentioned in Q.30) to perform a similar function?

1 - no
2 - yes Please give details _____

_____

_____

_____

_____

4 THE PERFORMANCE OF THE FIRM

33 Can you estimate the gross annual turnover of this firm for the last full financial year and, where applicable, for 1984 (please indicate a loss in brackets):

198 /8	EXACT FIGURE	1984	EXACT FIGURE
1 - 1-19K	_____	1 - 1-19K	_____
2 - 20-49K	_____	2 - 20-49K	_____
3 - 50-99K	_____	3 - 50-99K	_____
4 - 100-499K	_____	4 - 100-499K	_____
5 - 0.5-1M	_____	5 - 0.5-1M	_____
6 - 1M+	_____	6 - 1M+	_____

34 Can you indicate the firm's declared profit (or loss in brackets) for the last full financial year and, where applicable, for 1984:

198 /8	EXACT FIGURE	1984	EXACT FIGURE
1 - 1-19K	_____	1 - 1-19K	_____
2 - 20-49K	_____	2 - 20-49K	_____
3 - 50-99K	_____	3 - 50-99K	_____
4 - 100-499K	_____	4 - 100-499K	_____
5 - 0.5-1M	_____	5 - 0.5-1M	_____
6 - 1M+	_____	6 - 1M+	_____

35 Can you estimate how much the firm spent on research and development for the last full financial year and, where applicable, for 1984:

198 /8	EXACT FIGURE	1984	EXACT FIGURE
1 - nothing	_____	1 - nothing	_____
2 - 1-19K	_____	2 - 1-19K	_____
3 - 20-49K	_____	3 - 20-49K	_____
4 - 50-99K	_____	4 - 50-99K	_____
5 - 100-499K	_____	5 - 100-499K	_____
6 - 0.5-1M	_____	6 - 0.5-1M	_____
7 - 1M+	_____	7 - 1M+	_____

36 How many people were employed in this firm in:

(A) - 198 /8 ? _____
(B) - 1984 (if applicable)? _____

37 How many employees were directly involved with research and development in:

(A) - 198 /8 ? _____
(B) - 1984 (if applicable)? _____

38 How much did the firm export as a percentage of its total output in:

(A) - 198 /8 ? _____
(B) - 1984 (if applicable)? _____

39 What was the firm's debt to equity ratio in:

(A) - 198 /8 ? _____
(B) - 1984 (if applicable)? _____

40 What was the firm's return on investment ratio in:

(A) - 198 /8 ? _____
(B) - 1984 (if applicable)? _____

41 What was (were) the <u>main</u> constraint(s) to the firm's growth in:

(A) 198 /8 ?

_____
_____
_____
_____

(B) 1984 (if applicable)?

_____
_____
_____
_____

5 THE BUSINESS PLAN

42 Does the firm have a formal business plan?

1 - yes
2 - no GO TO SECTION 6

43 When was the business plan formulated?

_____

44 For what specific purpose was it formulated?

_____
_____
_____

45 Who in the firm was (were) responsible for its formulation (positions/functions in the firm)?

_____
_____
_____
_____
_____
_____
_____
_____

46 During the plan's formulation, was any help sought from professionals outside this firm?

1 - yes
2 - no GO TO Q.49

47 What type of professionals help did your firm access?

_____
_____
_____
_____
_____

48 Were these professionals asked for their help at the outset of the business plan's formulation?

1 - yes
2 - no Please give details _____
_____
_____

49 Was the plan <u>ever</u> redrafted?

1 - yes
2 - no GO TO Q.51

50 What prompted the redraft of the business plan?

_____
_____
_____
_____

51 Has the plan been of value to the business?

1 - yes In what way(s)? _____
_____
_____
_____
_____

2 - no Why not? _____
_____
_____
_____
_____

6 THE IMPACT OF VENTURE CAPITAL ON THE TARGET SECTOR

52 Has your firm ever contacted or been contacted by a venture capitalist?

1 - yes
2 - no **GO TO SECTION 6(D)**

53 On these occasions who made the initial contact?

1 - your firm	**CODE A**
2 - the venture capitalist(s)	**CODE B**
3 - both of the above	**CODE C**

54 BC In what year did the venture capitalist(s) first approach your firm?

_____

55 BC What stage of growth was the firm at when the venture capitalist(s) first approached your firm?

eg * concept generation stage
* business recently formed
* business expanding rapidly/steadily
* business declining

_____

56 BC How many venture capital organisations have approached your firm?

_____

57 BC With regard to the most valuable encounter, how did the venture capitalist find out about your firm?

_____
_____

58 BC How did this venture capitalist first contact your firm?

_____

59 BC Why do you consider this to be the most valuable encounter? (NB: with the venture capitalist initiating the contact.)

_____
_____

60 AC In what year did you first approach the venture capitalist(s)?

_____

61 AC What stage of growth had you firm reached when you first approached the venture capitalist(s)?

eg * concept generation stage
* business recently formed
* business expanding rapidly/steadily
* business declining

_____

62 AC With regard to the most valuable encounter, how did your firm find out about the venture capitalist?

_____
_____

63 AC How did your firm first contact this venture capitalist?

_____

64 AC Why do you consider this to be the most valuable encounter? (NB: with the firm initiating the contact.)

_____
_____

65 AC How many venture capitalists did the firm approach in total?

1 - one? GO TO Q.68
2 - two or more? _____

66 AC Why did the firm approach this number of venture capitalists?

_____

67 AC Was anything done to modify the proposed business venture/idea between the approach to one venture capitalist and the next?

1 - no
2 - yes Please give details _____
_____
_____
_____

68 AC Did the firm approach the venture capitalist(s):

1 - before looking for finance from other sources?
2 - whilst looking for finance from other sources?
3 - after looking for finance from other sources?

69 Where was (were) the venture capitalist(s) that had contact with your firm (predominantly) located?

_____
_____

70 What type of venture capitalist(s) approached (or were approached by) the firm (if known)?

eg * private individual
* independent venture capital fund
* Business Expansion Scheme fund
* captive subsidiary of a financial institution
* general/specialist fund

_____
_____
_____
_____
_____

71 What did your firm believe would result from the venture capitalist's involvement?

_____
_____
_____
_____
_____

72 Is your firm one which:

1 - has received (or is receiving) venture capital finance?
2 - has been refused venture capital finance? GO TO Q.74
3 - has decided not to make use of venture capital finance?

73 Has the firm ever been refused venture capital finance?

1 - yes
2 - no GO TO END OF SECTION

74 What main reason(s) were given for the refusal of venture capital finance?

_____
_____
_____
_____
_____

75 What did the firm do about this (these) refusal(s)?

_____
_____
_____
_____
_____

76 Did the firm ever re-approach the venture capitalist(s) who first refused funds?

1 - no
2 - yes What was the outcome? _____
_____
_____
_____

NB THE FOLLOWING SECTIONS APPLY TO THE FOLLOWING FIRMS
6(A) FIRMS RECEIVING VENTURE CAPITAL FINANCE
6(B) FIRMS REFUSED VENTURE CAPITAL FINANCE
6(C) FIRMS WHICH HAVE HAD CONTACT WITH VENTURE CAPITALISTS AND DECIDED NOT TO USE SUCH FINANCE
6(D) FIRMS WHICH HAVE HAD NO CONTACT WITH VENTURE CAPITALISTS

6(A) FIRMS RECEIVING VENTURE CAPITAL FINANCE

6(A) TERMS OF THE INVESTMENT

77 Have you received more than one injection of venture capital finance during the life of this firm?

	NUMBER
1 - yes	_____
2 - no	GO TO Q.91 (IGNORE UNDERLINED WORDS)

78 Please give the approximate date of the most important injection of venture capital received by the firm:

_____

79 Why did you consider this to be the most important injection of venture capital finance?

_____

_____

80 Approximately how soon after the initial application was this most important injection of venture capital finance received?

_____

81 Can you indicate how much was received from the venture capitalist in this most important injection of finance?

	EXACT FIGURE		EXACT FIGURE
1 - 1-50K	_____	7 - 551-650K	_____
2 - 51-150K	_____	8 - 651-750K	_____
3 - 151-250K	_____	9 - 751-850K	_____
4 - 251-350K	_____	10 - 851-950K	_____
5 - 351-450K	_____	11 - 950K+	_____
6 - 451-550K	_____		

82 What was the method of investment for this most important injection of venture capital?

1 - debt only
2 - equity only (Type _____)
3 - mixture of debt and equity
_____% debt
_____% equity (Type _____)
4 - other _____

83 What was the intended use of this most important venture capital funding?

_____
_____
_____
_____
_____

84 Was this investment critical to your firm's survival?

1 - no
2 - yes For what main reason? _____
_____
_____
_____

85 Was this a syndicated investment by a number of venture capitalists?

	NUMBER
1 - yes	_____
2 - no	

86 Where was (were) the venture capitalist(s) that supplied this most important injection of finance located?

_____
_____

87 What type(s) of venture capitalist(s) supplied this most important injection of finance (if known)?

eg * private individual
* independent venture capital fund
* Business Expansion Scheme fund
* captive subsidiary of a financial institution
* general/specialist fund

_____
_____
_____
_____

88 Has this most important finance been provided on a stage by stage basis?

1 - no
2 - yes On what terms? _____
_____
_____
_____

89 Is there the opportunity to go back to the venture capitalist(s) for more finance if required?

1 - yes
2 - no

Comments: _____
_____
_____
_____
_____

90 Was this most important injection of venture capital finance also the most recent?

1 - yes **GO TO SECTION 6(A)**
2 - no

91 Please give the approximate date of this most recent injection of venture capital received by the firm:

_____

92 Approximately how soon after the initial application was this most recent injection of venture capital finance received?

_____

93 Can you indicate how much finance was received during this most recent transaction with the venture capitalist?

	EXACT FIGURE		EXACT FIGURE
1 - 1-50K	_____	7 - 551-650K	_____
2 - 51-150K	_____	8 - 651-750K	_____
3 - 151-250K	_____	9 - 751-850K	_____
4 - 251-350K	_____	10 - 851-950K	_____
5 - 351-450K	_____	11 - 950K+	_____
6 - 451-550K	_____		

94 What was the method of investment for this most recent injection of venture capital?

1 - debt only
2 - equity only (Type _____)
3 - mixture of debt and equity
_____% debt
_____% equity (Type _____)
4 - other _____

95 What was the intended use of this most recent venture capital funding?

_____
_____
_____
_____
_____

96 Was this investment critical to your firm's survival?

1 - no
2 - yes For what main reason? _____
_____
_____
_____

97 Was this a syndicated investment by a number of venture capitalists?

NUMBER

1 - yes _____
2 - no

98 Where was (were) the venture capitalist(s) that supplied this recent injection of finance located?

_____
_____

99 What type(s) of venture capitalist(s) supplied this most recent injection of finance (if known)?

eg * private individual
* independent venture capital fund
* Business Expansion Scheme fund
* captive subsidiary of a financial institution
* general/specialist fund

_____
_____
_____
_____

100 Has this <u>most recent</u> finance been provided on a stage by stage basis?

1 - no
2 - yes On what terms? _____

101 Is there the opportunity to go back to the venture capitalist(s) for more finance if required?

1 - yes
2 - no

Comments: _____

6(A) cont'd CONTROLS EXERTED BY THE VENTURE CAPITALIST

NB EXPLANATION FOR THOSE FIRMS WITH MORE THAN ONE INJECTION OF VENTURE CAPITAL FINANCE:

"The following questions apply to the most important injection of venture capital finance for the firm"

102 What percentage of equity has been taken by the venture capitalist (syndicate)?

_____

103 At the time of the initial investment, did the venture capitalist (syndicate) state the return he (it) was expecting?

AMOUNT FOR EACH TYPE OF DEBT/EQUITY

1 - yes _____
_____
_____
_____

2 - no GO TO Q.105

104 Has the expected return on investment changed during the period of the venture capitalist's (syndicate's) involvement?

1 - no
2 - yes Please give details _____
_____
_____

105 Has the venture capitalist (syndicate) stated the time period of this investment?

TIME PERIOD

1 - yes _____
2 - no GO TO Q.107

106 Has this the length of this time period changed during the life of the investment?

1 - no
2 - yes Please give details _____
_____
_____

107 Has the venture capitalist (syndicate) discussed the nature of the disinvestment?

NATURE OF DISINVESTMENT

1 - yes _____

_____

_____

2 - no

108 Does the venture capitalist (syndicate) have a seat on the board?

1 - yes
2 - no

109 What kind of role does the venture capitalist (syndicate) play in the running of the firm?

1 - active with ongoing contact
2 - responsive with contact only when requested
3 - responsive with contact mostly in times of trouble
3 - passive with very little contact

Comments: _____

_____

_____

_____

110 What controls have been exerted (or imposed on the firm) by the venture capitalist (syndicate)?

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

111 Do you think the venture capitalist (syndicate) took a risk in investing in your firm?

1 - yes
2 - no

Comments: _____

_____

_____

_____

_____

6(A) cont'd **ADDED VALUE**

112 What general managerial assistance has the venture capitalist (syndicate) contributed to the firm?

_____
_____
_____
_____
_____
_____
_____

113 Has there been a change in business orientation/strategy during the venture capitalist's (syndicate's) involvement with the firm?

1 - no GO TO Q.115
2 - yes For what purpose? _____
_____
_____
_____
_____

114 Was this change in business orientation/strategy prompted by the venture capitalist (syndicate)?

1 - yes
2 - no

115 Has there been a change in leadership/management during the venture capitalist's (syndicate's) involvement with the firm?

1 - no GO TO Q.117
2 - yes For what purpose? _____
_____
_____
_____
_____

116 Was this change in leadership/management prompted by the venture capitalist (syndicate)?

1 - yes
2 - no

117 Has the venture capitalist (syndicate) ever introduced the firm to his (its) business contacts?

1 - no GO TO Q.119
2 - yes Who were these contacts? _____

118 What resulted from this (these) introduction(s)?

119 In financial terms, what has been the main advantage of the firm's involvement with venture capital and venture capitalists?

120 In financial terms, what has been the main disadvantage of the firm's involvement with venture capital and venture capitalists?

121 In non-financial terms, what has been the main advantage of the firm's involvement with venture capital and venture capitalists?

122 In non-financial terms, what has been the main disadvantage of the firm's involvement with venture capital and venture capitalists?

123 Do you think that the firm is in a better position now than it would have been if it had not obtained venture capital finance?

1 - yes In what way(s)? _____

_____

_____

_____

_____

_____ GO TO SECTION 7

2 - no Why not? _____

_____

_____

_____

_____

_____ GO TO SECTION 7

6(B) FIRMS REFUSED VENTURE CAPITAL FINANCE

124 Can you indicate how much finance was sought when you last had contact with the venture capitalist?

	EXACT FIGURE
1 - less than £50,000	_____
2 - £50,000 - £100,000	_____
3 - £100,001 - £250,000	_____
4 - £250,001 - £500,000	_____
5 - £500,001 - £750,000	_____
6 - £750,001 - £1,000,000	_____
7 - more than £1,000,000	_____

125 Where was this venture capitalist located?

_____

126 From where did the firm get the required finance after the venture capitalist's last refusal?

_____

_____

127 Do you think that your firm's area of business would be attractive for venture capital funding?

1 - yes In what way(s)? _____

_____

_____

2 - no Why not? _____

_____

_____

128 Do you think that the firm would be in a better position than it is now if it had obtained venture capital finance?

1 - yes In what way(s)? _____

_____

_____

_____

2 - no Why not? _____

_____

_____

_____

129 Do you believe that the venture capitalist(s) would have been taking a risk in investing in your firm?

1 - yes
2 - no

Comments: _____
_____
_____
_____
_____ GO TO SECTION 7

6(C) FIRMS WHICH HAVE HAD CONTACT WITH VENTURE CAPITALISTS AND DECIDED NOT TO USE VENTURE CAPITAL FINANCE

6(C) FIRMS WHICH DECIDED NOT TO USE VENTURE CAPITAL FINANCE

130 Has the firm ever considered making use of venture capital finance?

1 - yes What caused the firm to change its mind?

_____
_____
_____

2 - no What was (were) the firm's reason(s) for not wanting venture capital finance?

_____
_____
_____

131 Do you think that your firm's area of business would be attractive for venture capital funding?

1 - yes In what way(s)? _____
_____
_____
_____

2 - no Why not? _____
_____
_____
_____

132 Do you think that the firm would be in a better position than it is now if had obtained venture capital finance?

1 - yes In what way(s)? _____
_____
_____
_____
_____

2 - no Why not? _____
_____
_____
_____
_____

6(D) FIRMS WHICH HAVE HAD NO CONTACT WITH VENTURE CAPITALISTS

6(D) FIRMS WHICH HAVE HAD NO CONTACT WITH VENTURE CAPITALISTS

133 Has the firm ever heard of venture capital?

1 - no GO TO SECTION 7
2 - yes From where? _____

134 Has the firm ever considered making use of venture capital finance?

1 - yes What caused the firm to change its mind?

2 - no What was (were) the firm's reason(s) for not wanting venture capital finance?

135 Do you think that your firm's area of business would be attractive for venture capital funding?

1 - yes In what way(s)? _____

2 - no Why not? _____

136 Do you think that the firm would be in a better position than it is now if it had obtained venture capital finance?

1 - yes In what way(s)? _____

2 - no Why not? _____

7 SOURCES OF START-UP AND FURTHER FINANCE

137 Can you estimate how much capital was required to start-up this firm?

	EXACT FIGURE		EXACT FIGURE
1 - 1-24K	_____	6 - 250-499K	_____
2 - 25-49K	_____	7 - 500-749K	_____
3 - 50-74K	_____	8 - 750-999K	_____
4 - 75-99K	_____	9 - 1M+	_____
5 - 100-249K	_____		

138 Was the main source of start-up finance obtained from sources:

1 - internal to the firm? Please give details: _____

_____

_____

_____

_____ GO TO Q.143

2 - external to the firm? Please give details: _____

_____

_____

_____

_____

139 Did the major source of start-up finance require a business plan?

1 - yes
2 - no

140 What were the main terms or conditions placed on the investment by the major source of start-up finance?

_____

_____

_____

_____

141 How did the firm find out about the source which provided the majority of this start-up finance?

_____

142 How was contact established with the source which provided the majority of this start-up finance?

_____

143 Since start-up, has the firm ever applied for substantial financial support from sources external to the firm (excluding venture capital, and bank overdrafts and loans of less than £10,000)?

1 - no **GO TO SECTION 8**
2 - yes Please give details: _____

_____
_____
_____
_____
_____
_____

144 What mainly triggered the realisation that the firm required its first injection of post start-up external finance ?

eg * cashflow problems
* need to invest in new machinery
* need to move to new premises
* need for R & D expenditure

_____

145 Can you estimate how much finance was required at this initial stage of seeking substantial financial support after start-up (excluding venture capital, and bank overdrafts and loans of less than £10,000)?

	EXACT FIGURE		EXACT FIGURE
1 - 1-24K	_____	6 - 250-499K	_____
2 - 25-49K	_____	7 - 500-749K	_____
3 - 50-74K	_____	8 - 750-999K	_____
4 - 75-99K	_____	9 - 1M+	_____
5 - 100-249K	_____		

146 Did the major source supplying this initial injection of substantial external finance require a business plan?

1 - yes
2 - no

147 What were the main terms or conditions placed on the investment by the major source of this initial injection of substantial external finance?

_____
_____
_____
_____

148 How did the firm find out about the source which provided the majority of this initial substantial external finance?

_____

149 How was contact established with the source(s) which provided the majority of this initial substantial external finance?

_____

150 Was the firm's first substantial injection of external finance also the largest injection of external finance to date (excluding venture capital, and bank overdrafts and loans of less than £10,000)?

1 - yes GO TO SECTION 8
2 - no Please give details _____

_____
_____
_____
_____
_____

151 For this large injection of external finance, what mainly triggered the realisation that it was required?

eg * cashflow problems?
* need to invest in new machinery?
* need to move to new premises?
* need for R & D expenditure?

_____

152 Can you estimate the amount of external finance required by the firm to fund the above?

	EXACT FIGURE		EXACT FIGURE
1 - 1-24K	_____	6 - 250-499K	_____
2 - 25-49K	_____	7 - 500-749K	_____
3 - 50-74K	_____	8 - 750-999K	_____
4 - 75-99K	_____	9 - 1M+	_____
5 - 100-249K	_____		

153 Did the major source supplying this large injection of external finance require a business plan?

1 - yes
2 - no

154 What were the main terms or conditions placed on the investment by the major source of this large injection of external finance?

_____
_____
_____
_____

155 How did the firm find out about the source which provided the majority of this large injection of finance?

_____

156 How was contact established with the source which provided the majority of this large injection of finance?

_____

8 CONCLUSION - GENERAL OBSERVATIONS

157 Have you any general comment on the firm's experiences in raising funds at the various stages of its growth?

158 Have you any general comment on the firm's experiences (or lack of experience) with the venture capital industry?

159 Do you have any suggestions for improving the availability of:

(A) bank finance?

(B) govt/quasi-govt finance?

(C) venture capital finance?

160 What policy measure related to finance might be adopted to facilitate the growth of firms in the high technology industrial sector?

NB ALLOWED TO SEE A COPY OF THE BUSINESS PLAN: YES NO

THANK YOU FOR YOUR HELP

Appendix 4

VENTURE CAPITAL ORGANISATION INTERVIEW QUESTIONS

VENTURE CAPITAL ORGANISATION INTERVIEW QUESTIONS

1 What is the main focus of your firm's current investment strategy; and why?
- attractive industries?
- investment stage?
- size of investment?
- financing package?
- length of investment?
- return on investment?

2 Where do high technology investments fit into this strategy; and why?
- size of investment?
- particular problems (e.g. high risk)?
- existing versus pioneering technologies?
- comparison with other investments?
- future high technology focus?

3 When deciding whether to invest in a firm, is the location of the potential investee an important factor; and, if so, why?
- monitoring problems?
- local network of contacts?
- particular local expertise?
- mobilise finance more quickly (time from contact until investment)?
- cost variations in the provision of finance across regions?

4 What criteria does you company employ when selecting investees (risk evaluation/reduction); and why these particular criteria?
- nature of initial contact?
- business proposals received; reviewed; received finance?
- analysis of business proposal (product, management team, market niche)?
- further investigations (other criteria)?

5 How does your firm monitor its investments (risk management); and why are these particular methods employed?
- seat on board?
- role played in day-to-day operations?
- consultation requirements?
- reporting requirements?
- ratchet investment mechanisms?
- other controls?

6 What does your organisation offer the investee in terms of added value; and why?
- venture capital network?
- syndication?
- business contacts?
- staff recruitment?
- managerial assistance?
- post-investment involvement?
- investees aware of added value benefits?

7 Does your company ever take a controlling interest in investee firms; and, if so, why?
- attitude of investees to issue of control?
- penalty for failure to meet pre-set targets?
- replacement of founder/original owner?
- enabling disinvestment?

8 How does your organisation realise its investments; and why?
- flotation; trade sale; merger; liquidation?
- timing of disinvestment?
- return on investment?
- problems with founders/original owners?
- problems with financial markets?
- post-investment involvement?

9 How do you compare the role of venture capitalists with other financial institutions; and why?
- equity versus debt finance?
- issue of security?
- equity gap (seed, start-up and early development finance)?
- issue of risk (later-stage and buy-out finance)?
- hands-on involvement?

10 How do you see the future of the venture capital industry; and why?
- future investments (industry; stage)?
- future of high technology investments?
- government policy measures?

Appendix 5

RECONCILIATION OF SIC 1980 WITH SIC 1968

RECONCILIATION OF SIC 1980 WITH SIC 1968

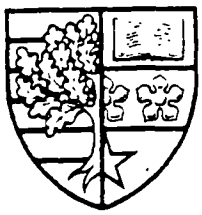
SIC Revised 1980				SIC 1968	
Class	Group	Activity Heading	Description	MLH	Description
34	343	3433	Alarms and signalling equipment	367/1	Alarms and signalling equipment
34	343	3435	Electrical equip. for industrial use not elsewhere specified	367/2pt	Cyclotron, particle accelerator and dielectric heating equip. manufacture only
34	344	3443	Radio and electronic capital goods	367/2	Other radio, radar and electronic capital goods
34	344	3454/2	Other electronic equipment not elsewhere specified	367pt	Misc. unspecified electronic equipment
37	371	3710	Measuring, checking and precision instruments and apparatus	367/2pt	Magnetic compass and gyroscope manufacturing only
37	373	3732	Optical precision instruments	367/2pt	Laser (excl. laser system) manufacturing only

Source: CSO (1980) Standard Industrial Classification Revised 1980: Reconciliation With Standard Industrial Classification 1968, London: Central Statistical Office

Appendix 6

THE POSTAL QUESTIONNAIRE

HERIOT-WATT UNIVERSITY



Please do not write in this column

1 - 4

5

(Please correct any errors in the address and name above)

POSTAL SURVEY OF HIGH TECHNOLOGY MANUFACTURING FIRMS

This questionnaire may be answered by the named person, the managing director or any member of senior management.

Name and position of respondent _____

_____

1 In what year was this firm founded? ☐☐☐☐ 6 - 9

2 Was this firm established as a:

☐ Wholly independent company?

☐ Subsidiary of another firm? **GO TO QUESTION 6** 10

3 Since formation, has this firm been acquired by another company, or does it remain totally independent?

☐ Acquired

☐ Independent 11

4 Was the main previous work experience of the principal founder in:

☐ Business management expertise?

☐ Technical expertise? 12

☐ Both of the above?

☐ Other? Please state _____

5 Does the main founder still work for this firm?

☐ Yes 13

☐ No

6 Is this company currently:

☐ Expanding rapidly? ☐ Static?

☐ Expanding steadily? ☐ Declining? 14

7 How many people are involved in the management team of this firm?

_____ 15-16

8 Can you estimate the gross annual turnover of this firm for the last full financial year?

☐ Less than £50,000
☐ £50,000 - £99,999
☐ £100,000 - £499,999
☐ £500,000 - £999,999
☐ £1,000,000 - £5,000,000
☐ More than £5,000,000

Please not wri in thi column

17

9 How many people are currently employed full-time in this firm?

_____

18

10 Is this firm primarily concerned with the:

☐ Manufacture of products?
☐ Provision of services? **GO TO QUESTION 13**

19

11 What is the main product of this firm (ie the product which contributed most to gross sales in the last financial year)?

_____

20-21

12 Which of the following categories would you say your firm's main product falls into?

☐ Imitation of a product already on the market
☐ Improvement to an existing product of this firm
☐ New product previously unavailable on the market
☐ Other? Please state _____

22

13 Has your firm ever contacted or been contacted by a venture capitalist?

☐ Yes
☐ No **GO TO END**

23

14 Is your firm one which has:

☐ Received (or is receiving) venture capital finance?
☐ Not received venture capital finance?

24

END

T H A N K Y O U F O R Y O U R C O O P E R A T I O N

Please return this questionnaire using the enclosed pre-paid envelope

Heather I M Wilson
Department of Business Organisation
Heriot-Watt University
31-35 Grassmarket
Edinburgh EH1 2HT

Appendix 7

COVERING LETTER FOR THE POSTAL QUESTIONNAIRE

Department of Business
Organisation

Heriot-Watt University

31-35 Grassmarket, Edinburgh EH1
Telephone 031-225 6465

Professor Leslie W Rodger

Head of Department
Professor A Keenan

your ref

our ref

date

The Growth of High Technology Manufacturing Firms in the United Kingdom

I am a PhD student in the department of Business Organisation, Heriot-Watt University, Edinburgh, and I am currently conducting a study on the above theme. This research is supported by a grant from the Economic and Social Research Council and aims to establish the extent to which the growth of high technology manufacturing firms has been influenced by the availability of venture capital finance (risk capital supplied in return for an equity stake in the business). I am not only interested in those firms which have accessed venture capital, but also those firms which have not received such finance. It is expected that this work will result in policy recommendations for improving the availability of risk finance on reasonable terms to firms in important high technology industrial sectors.

The initial stage of this project involves gathering basic information on the industry's experience (or lack of experience) with venture capitalists, and also establishing the size and origins of the individual firms. Therefore, I would be extremely grateful if you could devote a few minutes to completing the enclosed brief questionnaire in order to provide this information.

Your responses to the questions will remain completely confidential and individual firms will not be identifiable from the resulting aggregated data sets. If you require further information on the questionnaire in particular, or the project in general, please contact either myself (Ext 484) or my supervisor, Dr Ray Oakey (Ext 481), at the above address and telephone number.

I hope you will feel able to participate in this project and thank you in anticipation of your support.

Yours sincerely

Heather I M Wilson

Appendix 8

COVERING LETTER FOR THE FOLLOW-UP POSTAL QUESTIONNAIRE

Department of Business Organisation

Heriot-Watt University

31-35 Grassmarket, Edinburgh EH1 2HT
Telephone 031-225 6465

Professor Leslie W Rodger

Head of Department
Professor A Keenan

your ref

our ref

date

The Growth of High Technology Manufacturing Firms in the United Kingdom

I am currently conducting a study on the above theme and you may recall that I originally wrote to you on the 8th November, 1988, concerning a postal questionnaire survey (see enclosed copy of letter). If, however, you have responded to my initial request to take part in this survey, please ignore this reminder; or if my original letter did not in fact reach you, please treat the enclosed copy of that letter as the reason for my writing to you on this occasion.

In order to complete this stage of my research (i.e. the gathering of basic information on the industry's experience, or lack of experience, with venture capitalists) I am now conducting a follow-up survey. Therefore I have enclosed the same brief questionnaire as before, and hope that you will feel able to participate in the project and return the completed questionnaire in the stamped addressed envelope provided. May I again assure you that your responses to the questions will remain completely confidential (see original letter).

Thank you in anticipation of your support.

Yours sincerely

Heather I M Wilson

Appendix 9

LETTER REQUESTING A PERSONAL INTERVIEW (THREE VERSIONS)

Department of Business Organisation

Heriot-Watt University

31-35 Grassmarket, Edinburgh EH1 2HT
Telephone 031-225 6465

Professor Leslie W Rodger

Head of Department
Professor A Keenan

your ref

our ref

date

The Growth of High Technology Manufacturing Firms in the United Kingdom

You may recall that I wrote to you recently concerning the above PhD research project funded by the Economic and Social Research Council. You were kind enough then to take part in a postal questionnaire survey, which yielded basic information on the size and structure of your firm, and also the relevance of venture capital finance to your business.

In order to evaluate the contribution of venture capital funding to the growth of small, high technology firms, I am focusing this stage of the study on selected companies which have received (or are receiving) such finance.

However, from an original survey sample of 511 United Kingdom high technology firms located in Scotland, Cambridgeshire, Hertfordshire and Bedfordshire, only 33 comprise the target population. To qualify firms must be totally independent (or independent when formed), be primarily concerned with manufacturing, and also have received venture capital finance. As I am sure you realise, your firm falls within the above category and therefore I ask if you will, in strictest confidence, take part in a personal interview survey and devote no more than one hour of your time to answering some general questions on your firm's evolution and growth. Clearly, the small number of relevant firms available for interview implies that a high response rate is important for the survey results to be statistically significant when aggregated. Consequently, I hope you will agree to this request.

In order to avoid unnecessary effort, please do not reply to this letter as it will probably be more convenient if I telephone within the next few weeks to establish whether it is feasible to meet with you and, if so, to make an appointment that is acceptable to you.

Yours sincerely

Heather I M Wilson

Department of Business Organisation

Heriot-Watt University

31-35 Grassmarket, Edinburgh EH1 2HT
Telephone 031-225 6465

Professor Leslie W Rodger

Head of Department
Professor A Keenan

your ref

our ref

date

The Growth of High Technology Manufacturing Firms in the United Kingdom

You may recall that I wrote to you recently concerning the above PhD research project funded by the Economic and Social Research Council. You were kind enough then to take part in a postal questionnaire survey, which yielded basic information on the size and structure of your firm, and also the relevance of venture capital finance to your business.

In order to investigate whether the absence of venture capital funding has had an effect on the growth of small, high technology firms, I am focusing this stage of the study on selected companies which have had contact with venture capitalists and have not received such finance.

However, from an original survey sample of 511 United Kingdom high technology firms located in Scotland, Cambridgeshire, Hertfordshire and Bedfordshire, only 48 comprise the target population. To qualify firms must be totally independent (or independent when formed), be primarily concerned with manufacturing, and also have had contact with venture capitalists and not received venture capital finance. As I am sure you realise, your firm falls within the above category and therefore I ask if you will, in strictest confidence, take part in a personal interview survey and devote no more than one hour of your time to answering some general questions on your firm's evolution and growth. Clearly, the small number of relevant firms available for interview implies that a high response rate is important for the survey results to be statistically significant when aggregated. Consequently, I hope you will agree to this request.

In order to avoid unnecessary effort, please do not reply to this letter as it will probably be more convenient if I telephone within the next few weeks to establish whether it is feasible to meet with you and, if so, to make an appointment that is acceptable to you.

Yours sincerely

Heather I M Wilson

Department of Business Organisation

Heriot-Watt University

31-35 Grassmarket, Edinburgh EH1 2HT
Telephone 031-225 6465

Professor Leslie W Rodger

Head of Department
Professor A Keenan

your ref

our ref

date

The Growth of High Technology Manufacturing Firms in the United Kingdom

You may recall that I wrote to you recently concerning the above PhD research project funded by the Economic and Social Research Council. You were kind enough then to take part in a postal questionnaire survey, which yielded basic information on the size and structure of your firm, and also the relevance of venture capital finance to your business.

In order to investigate whether venture capital funding is an attractive alternative source of capital for small, high technology firms, I am focusing this stage of the study on selected companies which have had no contact with venture capitalists.

However, from an original survey sample of 511 United Kingdom high technology firms located in Scotland, Cambridgeshire, Hertfordshire and Bedfordshire, only 73 comprise the target population. To qualify firms must be totally independent (or independent when formed), be primarily concerned with manufacturing, and also have had no contact with venture capitalists. As I am sure you realise, your firm falls within the above category and therefore I ask if you will, in strictest confidence, take part in a personal interview survey and devote no more than one hour of your time to answering some general questions on your firm's evolution and growth. Clearly, the small number of relevant firms available for interview implies that a high response rate is important for the survey results to be statistically significant when aggregated. Consequently, I hope you will agree to this request.

In order to avoid unnecessary effort, please do not reply to this letter as it will probably be more convenient if I telephone within the next few weeks to establish whether it is feasible to meet with you and, if so, to make an appointment that is acceptable to you.

Yours sincerely

Heather I M Wilson

Appendix 10

DEFINITION OF TECHNOLOGICAL SOPHISTICATION VARIABLE

DEFINITION OF TECHNOLOGICAL SOPHISTICATION VARIABLE

The technological sophistication variable is a combination of four variables:
- R&D employees in 1989
- R&D expenditure in 1989
- percentage change in R&D employees 1984-89
- percentage change in R&D expenditure 1984-89

Numerical values were assigned to the different categories of these four variables:

R&D employees in 1989 (A)

2 = 0 employees
3 = 1 to 5 employees
4 = 5 or more employees
(based on crude numbers)

R&D expenditure in 1989 (B)

1 = £1 to £1,000
2 = £1,001 to £50,000
3 = £50,001 to £100,000
4 = £100,001 and over
(based on crude figures)

Percentage change in R&D employees 1984-89 (C)

1 = negative to 0%
2 = 1% to 33%
3 = 34% to 66%
4 = 67% and over

Percentage change in R&D expenditure 1984-89 (D)

1 = negative to 0%
2 = 1% to 33%
3 = 34% to 66%
4 = 67% and over

Each firm was assigned a numerical value for these four variables which were then totalled. This total was then divided by the number of variables with a value greater than zero for each firm (this was to allow for firms which would not receive a numerical value for (C) and (D) above because they were not operating in 1984). For example:

Firm	(A)	(B)	(C)	(D)	Total	Total/n	Result
1	4	3	4	3	14	14/4	3.5
2	4	0	2	1	7	7/3	2.3

The total and total/n columns were then taken one stage further:

Total
If n < or = 8, then assigned a value of 1
If n > or = 9, then assigned a value of 2

Total/n
If n < or = 2, then assigned a value of 1
if n > or = 2.1, then assigned a value of 2

The two values were then compared:

- if both were equal to 1, then a LOW TECHNOLOGY categorisation was assigned;
- if both were equal to 2, then a HIGH TECHNOLOGY categorisation was assigned;
- if the values were unequal, then the Total/n figure was taken by itself and categories assigned accordingly (i.e. n < or = 2 was LOW TECHNOLOGY; n > or = 2.1 was HIGH TECHNOLOGY)

In order to filter out anomalies from the high technology category, those firms which were assigned a high technology categorisation but which had no dedicated (full-time) R&D staff and less than £50,000 R&D expenditure in 1989 were identified and re-assigned.

REFERENCES

Aaker, D.A. & Day, G.S. (1983) Marketing Research, London: G. Wiley & Sons

Adler, F.R. (1983) "The Art of Venturing," in S.E. Pratt (ed) Guide to Venture Capital Sources, Wellesley Hills, Mass.: Capital Publishing Corp., pp121-123

Amit, R., Glosten, L. & Muller, E. (1990) "Does Venture Capital Foster the Most Promising Entrepreneurial Firms?" California Management Review, Spring, pp102-111

Anderson, C. (1988) "Search for £25m to Put 'Biotech Glen' on Map," Scotland on Sunday, 28th August, p16

Andrews, J. (1988) "Once Bitten, Twice Shy," Financial Times Venture Capital Survey, 30th November, p7

Andriesson, F. (1981) "A European Strategy for Innovation," Proceedings of a symposium on "Financing More Innovation at Less Risk," Luxembourg, 15-17 December, Luxembourg: Infobrief S.A.R.L., pp8-12

Archer, A. (1989) "Good Management Breeds Innovation," Financial Times Pharmaceuticals Survey, 6th November, p4

Armitage, B. (1984) Business Expansion Scheme, London: Institute of Chartered Accountants in England and Wales

Arthur Anderson (1987) Business Plans and Financing Proposals, London: Arthur Anderson & Co.

BTG (1988) "Finance for Innovation," London: British Technology Group

BVCA (1985) "Report on Investment Activity 1985," London: British Venture Capital Association

BVCA (1986) "Report on Investment Activity 1986," London: British Venture Capital Association

BVCA (1987a) "Report on Investment Activity 1987," London: British Venture Capital Association

BVCA (1987b) Survey of the Impact of Venture Capital in the UK, London: British Venture Capital Association

BVCA (1988) "Report on Investment Activity 1988," London: British Venture Capital Association

BVCA (1989) "Report on Investment Activity 1989," London: British Venture Capital Association

BVCA (1990a) "British Venture Capital Association Directory 1990," London: British Venture Capital Association

BVCA (1990b) "Report on Investment Activity 1990," London: British Venture Capital Association

Bain, A.D. & Reid, R.G. (1984) "The Finance Sector," in N. Hood & S. Young (eds) Industry, Policy and the Scottish Economy, Edinburgh: Edinburgh University Press, pp365-389

Bale, J. (1976) Location of Manufacturing Industry: Conceptual Frameworks for Geography, Edinburgh: Oliver & Boyd

Balls, E. & Lapper, R. (1991) "Treasury Probes Small Business Interest Rates," Financial Times, 3rd June, p1

Bank of England (1982) "Venture Capital," Bank of England Quarterly Bulletin, Vol. 22, No. 4, pp511-513

Batchelor, C. (1987) "Why 'Venture' is Not So Capital," Financial Times, 3rd November, p20

Batchelor, C. (1988a) "Trend in Venture Capital 'Against Mid-sized Funds,'" Financial Times, 3rd December, p5

Batchelor, C. (1988b) "Money and Time to Offer," Financial Times, 19th July, p9

Batchelor, C. (1988c) "From Mega Egos to Recalcitrant Disks," Financial Times, 16th August, p10

Batchelor, C. (1988d) "A Remarkably Inexact Science," Financial Times, 2nd August, p10

Batchelor, C. (1988e) "Mergers of Convenience," Financial Times Venture Capital Survey, 30th November, p5

Batchelor, C. (1989) "No Easy Answers: Government Schemes for Small Businesses," Financial Times Growing Business Survey, 5th June, p2

Batchelor, C. (1990a) "Angels Form the Majority in US," Financial Times, 2nd October, p17

Batchelor, C. (1990b) "Struggle to Open Up the Money Bags," Financial Times, 9th July, p15

Batchelor, C. (1990c) "There's More to It Than Meets the Eye," Financial Times, 1st May, p17

Batchelor, C. (1990d) "When the Time Comes to Bring in an Outsider," Financial Times, 15th May, p17

Batchelor, C. (1990e) "Venture Capital Role in Quoted Shares Seen," Financial Times, 23rd November, p6

Batchelor, C. (1991a) "Entrepreneurialism at the Grass Roots," Financial Times, 25th June, p11

Batchelor, C. (1991b) "An Ill Wind for the Entrepreneur," Financial Times, 12th August, p13

Beesley, M.E. & Wilson, P.E.B. (1981) "Government Aid to Small Firms in Britain," in P. Gorb, P. Dowell & P. Wilson (eds) Small Business Perspectives, London: Armstrong Publishing, pp254-308

Beesley, M. & Wilson, P. (1982) "Government Aid to the Small Firm Since Bolton," in J. Stanworth, A. Westrip, D. Watkins & J. Lewis (eds) Perspectives on a Decade of Small Business Research, Aldershot: Gower Publishing Co. Ltd., pp181-199

Beevor, J.R. (1981) "Obstacles to amalgamating technology and finance," Proceedings of a symposium on 'Financing More Innovation at Less Risk,' Luxembourg, 15-17 December, Commission of the European Communities, Luxembourg: Infobrief, S.A.R.L., pp41-50

Bennett, C. (1987) "Solving Investment Problems," Electronics Weekly, No. 1350, p21

Bienkowski, M. & Allen, K. (1985) Industrial Aids in the UK: A Businessman's Guide, Glasgow: University of Strathclyde Centre for the Study of Public Policy

Bienkowski, M., Walker, R. & Allen, K. (1988) Government Support for British Business, Glasgow: University of Strathclyde EPRC Ltd.

Binks, M. (1980) "Expansion in the small firm: some problems of finance," Planned Innovation, Jan/Feb 1980, pp27-31

Binks, M., Ennew, C. & Reed, G. (1988) "Banking on Small Firms in 1992," Proceedings of the 'National Small Firms Conference,' Cardiff, pp269-288

Bogaardt, M. (1982) "The Financing of New High Technology Based Enterprises," Proceedings of a symposium on "The Needs of NTBE's," Luxembourg, 17-19 November, Luxembourg: Infobrief S.A.R.L., pp168-170

Bolton Report, The (1971) Small Firms: Report of the Committee of Inquiry on Small Firms, Cmnd 4811, London: HMSO

Bradley, I.E. & South, J.B. (1981) Introductory Statistics for Business and Economics, Hinsdale, Illinois: Holt-Saunders Japan Ltd

Breheny, M.J. & McQuaid, R.W. (1985) "The M4 Corridor: Patterns and Causes of Growth in High Technology Industries," April, Geographical Papers No. 87, University of Reading: Department of Geography

Breheny, M.J. & McQuaid, R. (1987) "H.T.U.K.: The Development of the United Kingdom's Major Centre of High Technology Industry," in M.J. Breheny & R. McQuaid (eds) The Development of High Technology Industries: An International Survey, London: Croom Helm, pp297-354

Brett, M. (1989) How to Read the Financial Pages, London: Hutchinson Business Books

Bruno, A.V., Tyebjee, T.T. & Anderson, J.C. (1985) "Finding a Way Through the Venture Capital Maze," Business Horizons, Vol. 28, No. 1, pp12-19

Bryman, A. (1989) Research Methods and Organization Studies, London: Unwin Hyman

Bullock, M. (1983) Academic Enterprise, Industrial Innovation, and the Development of High Technology Financing in the United States, London: Brand Bros. & Co.

CBI (1981) Growth in Manufacturing Industry, London: Confederation of British Industry

CSO (1980) Standard Industrial Classification Revised 1980: Reconciliation With Standard Industrial Classification 1968, London: Central Statistical Office

Cary, L. (1987) The Venture Capital Report Guide to Venture Capital in the UK, Henley on Thames: Venture Capital Report

Chapman, J. (1986) "Venture Capital in the UK and its Impact on the Small Business Sector," Staff Working Paper, London: National Economic Development Office

Clark, R. (1987) Venture Capital in Britain, America and Japan, London: Croom Helm

Coggan, P. (1991) "Barclays Attacked on Small Company Loans," Financial Times, 3rd & 4th August, p6

Cohen, R. & Faris, R. (1983) "How to Venture Capital," Management Today, April, pp78-84

Cottrell, P.L. (1980) Industrial Finance 1830-1914: The Finance and Organization of English Manufacturing Industry, London: Methuen

Crompton, R. & Jones, G. (1988) "Researching White Collar Organisations: Why Sociologists Should Not Stop Doing Case Studies," in A. Bryman (ed) Doing Research in Organisations, London: Routledge, pp68-81

Cumming, M.R. (1983) "Forum: Financial Institutions and Venture Capital - Why the Banks are Now Attracted to the Venture Capital Industry," Proceedings of the conference on 'Venture Capital,' Edinburgh, 21 & 22 April, London: Financial Times Conference Organisation, pp99-102

Curran, J. (1986) Bolton Fifteen Years On: A Review and Analysis of Small Business Research in Britain 1971-1986, London: Small Business Research Trust

Curran, J. & Stanworth, J. (1982) "Bolton Ten Years On - A Research Inventory and Critical Review," in J. Stanworth, A. Westrip, D. Watkins & J. Lewis (eds) Perspectives on a Decade of Small Business Research: Bolton Ten Years On, Aldershot: Gower Publishing Company Ltd, pp3-27

DoE (1989) Loan Guarantee Scheme, London: Department of Employment Central Office of Information

DTI (1984) Regional Development Grants Guidance for Applicants, London: HMSO

Daft, R.L. (1983) "Learning the Craft of Organizational Research," Academy of Management Review, Vol. 8, No. 4, pp539-546

Davison, A.J. (1987) "Making a Synergistic Relationship Work," Accountancy, Vol. 99, No. 1121, pp117-118

Dean, G.D. (1982) "Private Interest and Local Support," Proceedings of the symposium on 'The Needs of New-Technology-Based Enterprises,' 17-19 November, Luxembourg: Infobrief SARL, pp101-105

Dean, G.D. (1984) "Collective Investment and Mutual Funds," in J.M. Gibb (ed) Venture Capital Markets for the Regeneration of Industry, North-Holland: Elsevier Science Publishers B.V., pp48-54

Deloitte Haskins & Sells (1983) Raising Venture Capital: An Entrepreneur's Guidebook, London: Deloitte Haskins & Sells

Dickson, M. (1990) "Wind of Uncertainty Rises," Financial Times Venture Capital Survey, 26th November, p6

Dodgson, M. & Rothwell, R. (1989) "Financing Early-Stage Innovation in Small Firms (Flexible and Broad-Ranging Support Packages)," Proceedings of the European conference on 'Enterprise, Innovation and 1992: Innovation Support Services in Europe,' October, pp57-69

Dodwell, J. (1989) "Start-up Capital," Nothing Ventured: The BVCA Newsletter, Summer, p6

Dolch, V. (1983) "An Entrepreneur's Viewpoint of the Venture Capital Scene in Europe," Proceedings of a conference on 'Venture Capital,' Edinburgh, 21 & 22 April, London: Financial Times Conference Organisation, pp109-113

Duffy, H. (1990) "Private-Sector Race to Run Business Aid Plan," Financial Times, 31st March, p5

Dunne, N. (1988) "A Case of Too Much Money," Financial Times Venture Capital Survey, 30th November, p6

Dunne, P. & Hughes, A. (1990) "Small Business: An Analysis of Recent Trends in Their Relative Importance and Growth Performance in the UK with Some European Comparisons," Cambridge: University of Cambridge Small Business Research Centre

Dunning, J.H. (1971) Problems of the Small Firm in Raising External Finance: The Results of a Sample Survey, Committee of Inquiry on Small Firms, Research Report Number 5, Economics Advisory Group, London: HMSO

Durr, B. (1991) "Angels Rush in Where Bankers Fear to Tread," Financial Times, 23rd July, p9

Economist, The (1937) "The Changing Capital Market," The Economist, 11th September, Vol. CXXVIII, No. 4907, pp507-508

Economist, The (1981) "Enterprise Zones: Dog-eared," The Economist, 19th September, Vol. 280, No. 7203, pp54-56

Economist, The (1989) "Venture Capital Drought," The Economist, Vol. 311, No. 7607, pp95-96

Everitt, B.S. (1977) The Analysis of Contigency Tables, London: Chapman & Hall

Farmbrough, H. (1988) "An Initiative Tarnished by a Tax Dodge Image," Financial Times Venture Capital Survey, 30th November, p2

Fast, N.D. (1983) "The European Venture Capital Industry," Proceedings of a conference on "Venture Capital," Edinburgh, 21 & 22 April, London: F.T. Conference Organisation, pp77-82

Financial Times (1988) "Mixed Views on a Counselling Initiative," Financial Times, 28th June, p12

Financial Times (1991a) "Investigate the Clearing Banks," Financial Times, 3rd June, p16

Financial Times (1991b) "In Brief ...," Financial Times, 23rd April, p14

Fishlock, D. (1988) "Technology Group Sell-off to be Studied by Minister," Financial Times, 14th April, p8

Flavin, J. (1982) "Venture Capital in Ireland," Proceedings of a symposium on "The Needs of NTBE's," Luxembourg, 17-19 November, Luxembourg: Infobrief S.A.R.L., pp15-24

Fleck, V. & Garnsey, E. (1987) "Entrepreneurship in the UK: The Climate of Enterprise and Small High Technology Firms," Cambridge: University of Cambridge (mimeo.)

Florida, R.L. & Kenney, M. (1987) "Agents of Innovation: Venture Capital and Neo-Schumpetarian Theories of Innovation," Ohio State University, Technology, Innovation and Social Change Project

Fogel, S. (1988) "BES Goes for Home Rentals," Financial Times, 23rd July, p6

Forrest, A. (1987) "A Share of the Action: Venture Capital - a Source of Finance for New or Expanding Business," NatWest Small Business Digest, April, Issue No. 25, pp2-5

Foss, D.C. (1985) "Venture Capital Network: The First Six Months of the Experiment," in J.A. Hornady, E.B. Shils, J.A. Timmons & K.H. Vesper (eds) Frontiers of Entrepreneurship Research, Wellesley, Mass.: Babson College, pp314-324

Foster, A. (1986) "3i Likes the Long Haul," Management Today, December, pp54-57

Gaston, R.J. & Bell, S.E. (1988) The Informal Supply of Capital, Washington DC: US Small Business Administration

Gibb, A. & Ritchie, J. (1982) "Understanding the Process of Starting Small Businesses," European Small Business Journal, Vol. 1, Pt. 1, pp26-45

Gibbons, M. & Watkins, D.S. (1981) "Innovation and the Small Firm," in P. Gorb, P. Dowell & P. Wilson (eds) Small Business Perspectives, London: Armstrong Publishing, pp340-348

Glasmeier, A., Markusen, A. & Hall, P. (1983) "Defining High Technology Industries," IURDS Working Paper (407), Berkeley: University of California

Glassmeyer, E.F. (1983) "Venture Financing Techniques," in S.E. Pratt (ed) Guide to Venture Capital Sources, Wellesley Hills, Mass.: Capital Publishing Corp., pp76-78

Golder, S.C. (1983) "Structuring and Pricing the Financing," in S.E. Pratt (ed) Guide to Venture Capital Sources, Wellesley Hills, Mass.: Capital Publishing Corp., pp79-88

Goldstein-Jackson, K. (1990) "Some Home Truths About BES: Diary of a Private Investor," Financial Times, 26th May, p4

Gopalan, S. (1986) "To Get Your Cash, First Get Your Plan Right," The Accountant, Vol. 194, No. 5780, p17

Greenhow, F. (1982) "The Banks and Bolton Ten Years On," in J. Stanworth, A. Westrip, D. Watkins & J. Lewis (eds), Perspectives on a Decade of Small Business Research: Bolton Ten Years On, Aldershot: Gower Publishing Co. Ltd., pp31-43

Grieve Smith, J. & Fleck, V. (1987) "Business Strategies in Small High-Technology Companies," Long Range Planning, Vol. 20, No. 2, pp61-68

Grieve Smith, J. & Fleck, V. (1989) "Strategy and Finance in Small High-Technology Companies," in A. Silberston (ed) Technology and Economic Progress, London: MacMillan Press, pp216-239

HMSO (1979) "Radio, Radar and Electronic Capital Goods," Business Monitor PA367 1979, Report on the Census of Production, London: HMSO

HMSO (1984) How to Make Your Business Grow: A Practical Guide to Government Advice and Schemes, London: HMSO

HMSO (1986a) "Electrical Equipment for Industrial Use, and Batteries and Accumulators," Business Monitor PA343 1986, Report on the Census of Production, London: HMSO

HMSO (1986b) "Telecommunication Equipment, Electrical Measuring Equipment, Electronic Capital Goods and Passive Electronic Components," Business Monitor PA344 1986, Report on the Census of Production, London: HMSO

HMSO (1986c) "Miscellaneous Electronic Equipment," Business Monitor PA345 1986, Report on the Census of Production, London: HMSO

HMSO (1986d) "Measuring, Checking and Precision Instruments and Apparatus," Business Monitor PA371 1986, Report on the Census of Production, London: HMSO

HMSO (1986e) "Optical Precision Instruments and Photographic Equipment," Business Monitor PA373 1986, Report on the Census of Production, London: HMSO

Hall, G. (1987) "Lack of Finance as a Constraint on the Expansion of Innovatory Small Firms," Report to the ACARD study on 'Barriers to Growth,' London: Advisory Council on Research and Development (Cabinet Office)

Hambrecht, W.R. (1984) "Venture Capital and the Growth of Silicon Valley," California Management Review, Vol. XXVI, No. 2, pp74-82

Hamilton Fazey, I. (1987) "Venture Capital Goes North," Financial Times, 7th December, p6

Hamilton Fazey, I. (1988a) "Initiative Should Make Help More Accessible," Financial Times Small Business Survey, 28th April, p10

Hamilton Fazey, I. (1988b) "Local Knowledge an Asset for the North's Players," Financial Times Venture Capital Survey, 30th November, p3

Harrap's Dictionary of Business & Finance (1988) London: Guild Publishing

Harrison, M. (1988) "Big Companies to Lose Grants," The Independent, 13th January, p19

Harrison, R.T. & Mason, C.M. (1991) "Informal Investment Networks: A Case Study from the United Kingdom," Entrepreneurship and Regional Development, Vol. 3, No. 3, pp269-279

Harvey, L. (1987) "Factors Affecting Response Rates to Mailed Questionnaires: A Comprehensive Literature Review," Journal of the Market Research Society, Vol. 29, No. 3, pp341-353

Haslett, B. (1981) "Financing Start-Ups of New Technology-Based Enterprises," (Discussion Group B), Proceedings of the symposium on 'Financing More Innovation at Less Risk,' 15-17 December, Luxembourg: Infobrief S.A.R.L., pp125-127

Hertz, L. (1982) In Search of a Small Business Definition: An Exploration of the Small Business Definitions of the U.S., the U.K., Israel and the Peoples' Republic of China, Washington D.C.: University Press of America, Inc.

Hodgson, R.G. (1984) "European Secondary Level Share Markets - The Entrepreneur's View," in J.M. Gibb (ed) Venture Capital Markets for the Regeneration of Industry, Luxembourg: Elsevier Science Publishers B.V. (North-Holland), pp117-121

Holberton, S. (1990) "Cutting Through the Conceptual Fog," Financial Times, 7th November, p17

Holberton, S. (1991) "Short-termism: Myth or Reality?" Financial Times, 11th February, p9

Hood, N. & Young, S. (1984) "Conclusions: The Way Ahead," in N. Hood & S. Young (eds) Industry, Policy and the Scottish Economy, Edinburgh: Edinburgh University Press, pp390-412

Hosking, P. (1988) "Venture into the Parks," The Independent, 25th February

House of Lords (1991) Innovation in Manufacturing Industry, Select Committee on Science and Technology, Vol. 1 - Report, London: HMSO

ISE (1988/89) "The Primary Market," Quality of Markets Quarterly, Winter, London: International Stock Exchange, p19-29

Johnston, R.F. (1983) "Forum: The Medical and Healthcare Field," Proceedings of a conference on 'Venture Capital,' Edinburgh, 21 & 22 April, London: Financial Times Conference Organisation, pp123-125

Kelly, T.J.C. (1986) "Location and Spatial Distribution of High Technology in Great Britain: Computer Electronics," Unpublished PhD thesis, Cambridge: University of Cambridge

Kelly, T. (1987) The British Computer Industry: Crisis and Development, London: Croom Helm

Kerlinger, F.N. (1986) Foundations of Behavioural Research, Japan: CBS Publishing Ltd.

Kozmetsky, G., Gill, M.D. Jr. & Smilor, R.W. (1985) Financing and Managing Fast-Growth Companies: The Venture Capital Process, Lexington, Mass.: Lexington Books

Kramer, D.J. (1983) "The Entrepreneur's Perspective," in S.E. Pratt (ed) Guide to Venture Capital Sources, Wellesley Hills, Mass.: Capital Publishing Corp., pp126-129

Kryzanowski, L. & Giraldeau, R. (1977) "Venture Capital Management: A Survey of Attitudes Towards Selection Criteria," American Journal of Small Business, Vol. 11, No. 1, pp29-37

Lancaster, H. (1991) "Sevin Rosen's New Venture Capital Fund Hopes to Find Gems as Rivals Seek Safety," Wall Street Journal, 16th December, pA6

Lascelles, D. (1991) "Barclays Toughens Stance Towards Small Businesses," Financial Times, 2nd August, p1

Larsen, J.K. & Rogers, E.M. (1984) Silicon Valley Fever: Growth of High Technology Culture, London: Unwin

Law, C.M. (1980) British Regional Development Since World War I, London: David & Charles

Lawrence, I.T. (1988) "Investment in New Biotechnology Firms by British Venture Capitalists - Attitudes to, and Evaluation of, Business Proposals," Unpublished PhD thesis, Birmingham: University of Aston

Laydon, J. (1988) "Public/Private Sector Investment Bridge," Paper presented at a conference on 'Venture Capital,' 28-29 April, Edinburgh, sponsored by BVCA and Scottish Financial Enterprise

Lees, D. (1971) Financial Facilities for Small Firms, Committee of Inquiry on Small Firms, Research Report Number 4, Economics Advisory Group, London: HMSO

Levin, R.I. (1987) Statistics for Management, London: Prentice-Hall International (UK) Ltd.

Little, A.D. (1977) New Technology-Based Firms in the United Kingdom and the Federal Republic of Germany, London: Anglo-German Foundation for the Study of Industrial Society

Lorenz, T. (1985) Venture Capital Today, Cambridge: Woodhead-Faulkner

MacMillan, I.C., Siegel, R. & Subba Narasimha, P.N. (1985) "Criteria Used by Venture Capitalists to Evaluate New Venture Proposals," in J.A. Hornady, E.B. Shils, J.A. Timmons & K.H. Vesper (eds) Frontiers of Entrepreneurship Research, Wellesley, Mass.: Babson College, pp126-141

Macmillan Report, The (1931) Committee on Finance and Industry Report, Cmnd 3897, London: HMSO

Marris, R. (1966) The Economic Theory of 'Managerial' Capitalism, London: Macmillan

Marsh, C. (1984) "Problems With Surveys: Method or Epistemology?" in M. Bulmer (ed) Sociological Research Methods: An Introduction, London: Macmillan, pp82-102

Marsh, P., Batchelor, C. & Barchard, D. (1991) "Full Benefit of Rate Cuts Not Passed to Small Businesses," Financial Times, 18th July, p1

Marshall, R.C. (1983) "Guest Speaker," Proceedings of a conference on "Venture Capital," Edinburgh, 21 & 22 April, London: F.T. Conference Organisation, pp72-76

Martin, P. & Barchard, D. (1991) "Politics, Bad dogs and Bad Banks," Financial Times, 8th/9th June, p6

Martin, R. (1989) "The Growth and Geographical Anatomy of Venture Capitalism in the United Kingdom," Regional Studies, Vol 23.5, pp389-403

Mason, C. (1987) "Venture Capital in the United Kingdom: A Geographical Perspective," National Westminster Bank Quarterly Review, May, pp47-59

Mason, C. & Harrison, R. (1986) "The Regional Impact of Public Policy Towards Small Firms in the United Kingdom," in D. Keeble & E. Wever (eds) New Firms and Regional Development in Europe, London: Croom Helm, pp224-255

Mason, C., Harrison, R. & Chaloner, J. (1991) "Informal Risk Capital in the UK: A Study of Investor Characteristics, Investment Preferences and Investment Decision-Making," Venture Finance Research Project Working Paper No. 2, Department of Geography, University of Southampton

Mayer, K.B. & Goldstein, S. (1961) The First Two Years: Problems of Small Firm Growth and Survival, Washington D.C.: Small Business Administration

McMurtry, B.J. (1986) "Tax Policy Influence on Venture Capital," in R. Landau & D.W. Jorgenson (eds) Technology and Economic Policy, Cambridge, Mass.: Ballinger Publishing Company, pp137-151

Moore, C. (1990) "Scottish Enterprise: Evolution or Revolution of Enterprise Training," Regional and Industrial Policy Research Series, Research Paper No. 6, Glasgow: University of Strathclyde

Moseley, C.M. (1985) "Raising Finance for the New Biotechnology-based Ventures," Industrial Biotechnology, Vol. 5, Issue 3, pp63-65

NEDC (1986) Lending to Small Firms: A Study of Appraisal and Monitoring Methods, London: National Economic Development Council (Committee on Finance for Industry)

Nachmias, C. & Nachmias, D. (1982) Research Methods in the Social Sciences, London: Edward Arnold Ltd.

New Scientist (1987) "First Raise Your Money," Science for Profit: A Venture Capital Report, New Scientist, 8th October, pp4-6

Norusis, M.J. (1986) The SPSS Guide to Data Analysis, Chicago: SPSS Inc.

OECD (1985) Venture Capital in Information Technology, Paris: Organisation for Economic Co-operation and Development

Oakey, R.P. (1984a) High Technology Small Firms, London: Frances Pinter

Oakey, R.P. (1984b) "Finance and Innovation in British Small Independent Firms," OMEGA International Journal of Management Science, Vol. 12, No. 2, pp113-124

Oakey, R. (1985) "High-technology Industries and Agglomeration Economies," in P. Hall & A. Markusen (eds) Silicon Landscapes, London: Allen & Unwin, pp94-117

Oakey, R. (1988) "Scottish Industrial Growth and Regional Government Assistance," Scottish Business Planner, May, pp10-11

Oakey, R., Faulkner, W., Cooper, S. & Walsh, V. (1990) New Firms in the Biotechnology Industry: Their Contribution to Innovation and Growth, London: Pinter Publishers

Oakey, R., Rothwell, R. & Cooper, S. (1988) Management of Innovation in High Technology Small Firms, London: Pinter Publishers

Oliver, D.S. (1981) "Financing More Innovation at Less Risk," Proceedings of the symposium on 'Financing More Innovation at Less Risk,' 15-17 December, Luxembourg: Infobrief S.A.R.L., pp150-160

Orsenigo, L. (1989) The Emergence of Biotechnology: Institutions and Markets in Industrial Innovation, London: Pinter Publishers

Parkes, C. (1988) "Travelling a Road of Money and Risk," Financial Times, 26th April, p16

Patricof, A. (1983) "Pitfalls in Venturing," in S.E. Pratt (ed) Guide to Venture Capital Sources, Wellesley Hills, Mass.: Capital Publishing Corp., pp124-125

Pavitt, K. (1982) "R&D Patenting and Innovative Activities: A Statistical Exploration," Research Policy, Vol. 13, No. 6, pp343-373

Pennington, T.M. (1982) "Venture Capital in Practice: A Case History," in S.E. Pratt (ed) How to Raise Venture Capital, New York: Charles Scribner's Sons, pp178-186

Perez, R.C. (1984) Inside Investment Banking, New York: Praeger

Peters, R.S. (1983) "Forum: Financial Institutions and Venture Capital - Is the Legislative Framework Right? An Investment Trust's Viewpoint," Proceedings from a conference on 'Venture Capital,' Edinburgh, 21-22 April, London: FT Organisation, pp103-108

Plender, J. (1990) "Malaise in Need of Long-term Remedy," Financial Times, 20th July, p16

Pratt, G. (1990) "Venture Capital in the United Kingdom," Bank of England Quarterly Bulletin, Vol. 30, No. 1, pp78-83

Pratt, S.E. (1982) "Preface," in S.E. Pratt (ed) How to Raise Venture Captal, New York: Charles Scribner's Sons, ppXV-XVII

Pratt, S.E. (1983a) "Overview and Introduction to the Venture Capital Industry," in S.E. Pratt (ed) Guide to Venture Capital Sources, Wellesley Hills, Mass.: Capital Publishing Corp., pp7-9

Pratt, S.E. (1983b) "The United States Experience - Venture Capital - The Engine of US Growth?" Proceedings of a conference on 'Venture Capital,' Edinburgh, 21-22 April, London: Financial Times Conference Organisation, pp5-11

Pratt, S.E. (1983c) "Guidelines for Dealing with Venture Capitalists," in S.E. Pratt (ed) Guide to Venture Capital Sources, Wellesley Hills, Mass.: Capital Publishing Corp., pp51-53

Pratten, C. (1991) The Competitiveness of Small Firms, Cambridge: Cambridge University Press

Radcliffe Report, The (1960) Committee on Working of Monetary System: Minutes of Evidence, Cmnd 827, London: HMSO

Rothwell, R. (1985) "Venture Finance, Small Firms and Public Policy in the UK," Research Policy, No. 14, pp253-265

Rothwell, R. & Zegveld, W. (1985) Reindustrialization and Technology, Essex: Longman

Rowntree, D. (1984) Statistics Without Tears: A Primer for Non-mathematicians, Middlesex: Penguin Books Ltd.

Scott, J. & Hughes, M. (1980) The Anatomy of Scottish Capital, London: Croom Helm

SDA (1988) Electronics and Support Companies in Scotland, Glasgow: Scottish Development Agency

Scottish Enterprise (1991) Financial Assistance: A Guide to Business in Scotland, Glasgow: Scottish Enterprise

Segal Quince & Partners (1985) The Growth of High Technology Industry in a University Town, London: Brand Brothers & Co.

Shilson, D. (1984) "Venture Capital in the United Kingdom," Bank of England Quarterly Bulletin, Vol. 24, No. 2, pp207-211

Shoebridge, T. (1986) "The 'Hands On' Capital Link," Accountancy, Vol. 98, No. 1117, pp119-122

Siegel, S. (1956) Nonparametric Statistics for the Behavioral Sciences, London: McGraw-Hill Book Co. Ltd

Siegel, L. & Markoff, J. (1985) The High Cost of High Tech: The Dark Side of the Chip, New York: Harper & Row

Simon, H.A. (1982) Models of Bounded Rationality: Behavioural Economics and Business Organisation, Vol. II, Cambridge, Mass.: MIT Press

Smitham, P. (1987) "New Breed Has Get-Up-And-Go," Electronics Weekly, 4th February, No. 1350, p20

Stanworth, M.J.K. & Curran, J. (1981) "Growth and the Small Firm - An Alternative View," in P. Gorb, P. Dowell & P. Wilson, (eds) Small Business Perspectives, London: Armstrong Publishing, pp152-172

Stephens, P. (1991) "Government Clears Banks Over Loans to Small Businesses," Financial Times, 3rd July, p18

Stephens, P. & Lascelles, D. (1991) "Major Acts Over Banks' Loan Rates to Business," Financial Times, 5th June, p1

Stevens, H.A.R. (1981) "Criteria for Selection of Venture Capital Projects: Reasons Behind Successes and Failures in the Past," in P. Gorb, P. Dowell & P. Wilson (eds) Small Business Perspectives, London: Armstrong Publishing, pp97-108

Storey, D., Keasey, K., Watson, R. & Wynarczyk, P. (1987) The Performance of Small Firms: Profits, Jobs and Failures, London: Croom Helm

Storey, D., Watson, R. & Wynarczyk, P. (1988) "Fast Growth Small Businesses: Case Studies of 40 Small Firms in North East England," Research Paper No. 67, London: Department of Employment

Stoy Hayward (1989) The Stoy Hayward Guide to Venture Capital 1989, London: Stoy Hayward

Tait, N. (1991) "Hope Springs Eternal," Financial Times Venture Capital Survey, 6th November, p4

Tamari, M. (1981) "The Financial Structure of the Small Firm - An International Comparison of Corporate Accounts in the U.S.A., France, U.K., Israel, and Japan," in P. Gorb, P. Dowell & P. Wilson (eds) Small Business Perspectives, London: Armstrong Publishing, pp78-95

Taylor, A. (1987) "Curb on Enterprise Zones," Financial Times, 18th December, p6

Taylor, A. (1988) "Barratt plans business scheme package," Financial Times, 25th April, p4

Taylor, G. (1983) "UK Venture Capital in Practice," Paper presented at a conference on 'Venture Capital,' 21st &22nd April, London: F.T. Conference Organisation, pp26-32

Thomas, W.A. (1978) The Finance of British Industry 1918-1976, London: Methuen and Co. Ltd.

Timmons, J.A. (1981) "A Business Plan is More Than a Financing Device," in P.Gorb, P.Dowell & P. Wilson (eds) Small Business Perspectives, London: Armstrong Publishing, pp119-126

Timmons, J.A. (1983) "Venture Capital: More Than Money?" in S.E. Pratt (ed) Guide to Venture Capital Sources, Wellesley Hills, Mass.: Capital Publishing Corporation

Timmons, J.A., Smollen, L.E. & Dingee, A.L.M (1977) New Venture Creation: A Guide to Small Business Development, Illinois: Richard D Irwin, Inc.

Townsend, A.R. (1987) "Regional Policy," in W.F. Lever (ed) Industrial Change in the United Kingdom, Essex: Longman Scientific and Technical, pp223-239

UK Venture Capital Journal (1986) "Special Report: Regional Venture Capital," UK Venture Capital Journal, September, pp7-16

Waite, C.P. (1983) "The Presentation and Other Key Elements," in S.E. Pratt (ed) Guide to Venture Capital Sources, Wellesley Hills, Mass.: Capital Publishing Corp. pp68-70

Waters, R. (1991) "Small Company Failures Reach a 20-year High," Financial Times, 20th May, p6

Watkins, D.S. (1978) Raising Finance for New Enterprises: A Guide for Small Firms, No. 13, Small Firms Information Service, London: H.M.S.O.

Weiss, M.A. (1983) "High Technology Industries and the Future of Employment," Built Environment, Vol. 9, No. 1, pp51-60

Wetzel, W.E. (1983) "Angels and Informal Risk Capital," Sloan Management Review, Vol. 24, No. 4, pp23-34

Williams, S. (1987) Small Business Guide, London: Penguin Books

Wilson, J.W. (1986) The New Venturers: Inside the High-stakes World of Venture Capital, Mass.: Addison-Wesley Publishing Co.

Wilson Report, The (1979) The Financing of Small Firms: Interim Report of the Committee to Review the Functioning of Financial Institutions, Cmnd 7503, London: HMSO

Wilson Report, The (1980) Committee to Review the Functioning of Financial Institutions Report, Cmnd 7937, London: HMSO

Woodcock, C. (1985) Raising Finance: The Guardian Guide for the Small Business, London: Kogan Page

Woodcock, C. (1986) The Guardian Guide to Running a Small Business, London: Kogan Page

Wright, M. & Jarrett, M. (1981) "Will Small be Beautiful in the 80s?" Accountancy, Vol. 92, No. 1052, pp107-110

Young, G. (1985) Venture Capital in High-Tech Companies: The Electronics Business in Perspective, London: Frances Pinter

Young, S. & Stewart, D. (1986) "The Regional Implications of Inward Direct Investment," in A. Amin & J.B. Goddard (eds) Technological Change, Industrial Restructuring and Regional Development, London: Allen & Unwin, pp77-99

BIBLIOGRAPHY

Balfour, A. (1989) "Technology Sell-outs Herald a Crisis," Scottish Business Insider, September, pp2-4

Bannock, G. (1990) The Economic Impact of Management Buy-outs, London: 3i

Bedfordshire County Council (1988) 'Company and Employment Database,' County Planning Office, Bedford: Bedfordshire County Council

Birley, S. (1985) "The Role of Networks in the Entrepreneurial Process," in J.A. Hornady, E.B. Shils, J.A. Timmons & K.H. Vesper (eds) Frontiers of Entrepreneurship Research, Wellesley Hills, Mass.: Center for Entrepreneurial Studies, Babson College, pp325-337

Borders Regional Council, Scottish Borders Business Directory, Melrose: Borders Region

Byers, B.H. (1983) "Relationship Between Venture Capitalist and Entrepreneur," in S.E. Pratt (ed) Guide to Venture Capital Sources, Wellesley Hills, Mass.: Capital Publishing, pp130-132

Cambridge City Council (1986) Employment Development Strategy: High Tech and Conventional Manufacturing Industry, Cambridge: Cambridge City Council

Cambridgeshire County Council (1988) 'Company and Employment Database,' Corporate Policy and Planning, Cambridge: Cambridgeshire County Council

Campbell, W.G. (1969) Form and Style in Thesis Writing, Boston: Houghton Mifflin Co.

Central Regional Council, Industrial and Commercial Index, Stirling: Central Region

Chadwick, L. (1982) "Are the Banks Doing Enough for Small Firms?" Management Accounting, Vol. 60, No. 8, pp38-39

Chadwick, L. & Ward, D. (1982) "Have the Banks Failed the Small Man?" Accountancy, Vol. 93, No. 1063, pp66-67

Churchill, N.C. & Lewis, V.L. (1985) "Bank Lending to New and Growing Enterprises," in J.A. Hornady, E.B. Shils, J.A. Timmons & K.H. Vesper (eds) Frontiers of Entrepreneurship Research, Wellesley Hills, Mass.: Center for Entrepreneurial Studies, Babson College, pp338-357

Coates, B.E. & Rawstron, E.M. (1971) Regional Variations in Britain, London: B.T. Batsford Ltd.

Coutarelli, S.A. (1977) Venture Capital in Europe, London: Praeger

Cross, M. (1981) New Firm Formation and Regional Development, Farnborough, Hants.: Gower Publishing Co. Ltd.

Davies, J.R. & Kelly, M. (1972) Small Firms in the Manufacturing Sector, Committee of Inquiry on Small Firms, Research Report Number 3, London: HMSO

Della Porta, P. (1981) "How to Understand the Implication of the Innovative Process," Proceedings of a conference on 'Financing More Innovation at Less Risk,' 15-17 December, Luxembourg: Infobrief S.A.R.L., pp64-68

DTI (1984) How to Make Your Business Grow: A Practical Guide to Government Advice and Schemes, London: HMSO

Dimson, E. (1981) "Financing the Smaller Company," in P. Gorb, P. Dowell & P. Wilson (eds) Small Business Perspectives, London: Armstrong Publishing, pp127-137

Economist, The (1986) "Americans Venture Abroad," The Economist, 24th May, Vol. 229, No. 7447, pp76-78

Eisenhardt, K.M. & Forbes, N. (1984) "Technical Entrepreneurship: An International Perspective," Columbia Journal of World Business, Vol. XIX, No. 4, pp31-38

Fife Regional Council, Business Directory, Glenrothes: Fife Region

Firn, J.R. & Roberts, D. (1984) "High-Technology Industries," in N. Hood & S. Young (eds) Industry, Policy and the Scottish Economy, Edinburgh: Edinburgh University Press, pp288-325

Florida, R.L. & Kenney, M. (1988) "Venture Capital, High Technology and Regional Development," Regional Studies, Vol. 22.1, pp33-48

Foss, D.C. (1985) "Venture Capital Network: The First Six Months of the Experiment," in J.A. Hornady, E.B. Shils, J.A. Timmons & K.H. Vesper (eds) Frontiers of Entrepreneurship Research, Wellesley Hills, Mass.: Center for Entrepreneurial Studies, Babson College, pp314-323

Freeman, C. (1971) The Role of Small Firms in Innovation in the United Kingdom Since 1945, Committee of Inquiry on Small Firms, Research Report Number 6, London: HMSO

Goddard, J., Thwaites, A. & Gibbs, D. (1986) "The Regional Dimension to Technological Change in Great Britain," in A. Amin & J.B. Goddard (eds) Technological Change, Industrial Restructuring and Regional Development, London: Allen & Unwin, pp140-156

Grampian Regional Council (1988) Grampian Directory 88, Aberdeen: Grampian Region

Grieve Smith, J. & Fleck, V. (1988) "Strategies of New Biotechnology Firms," Long Range Planning, Vol. 23, No. 3, pp51-58

Hargreaves, R.L. (1983) Starting a Business, London: Heinemann

Haslett, B. & Smollen, L.E. (1983) "Preparing a Business Plan," in S.E. Pratt (ed) Guide to Venture Capital Sources, Wellesley Hills, Mass.: Capital Publishing Corp., pp54-64

HMSO (1978) Industrial Innovation, London: HMSO, Advisory Council for Applied Research and Development

HMSO (1979) Technological Change: Threats and Opportunities for the United Kingdom, London: HMSO, Advisory Council for Applied Research and Development

Hertfordshire Industrial and Commercial Register, The (1988) Hatfield, Herts.: Hatfield Polytechnic Library

Highland Regional Council, Industrial Handbook and Directory, Inverness: Highland Region

Jennings, D.F. & Sexton, D.L. (1985) "A Contextual Analysis of Venture Activities: Implications for New Research Directions in Venture Capital," in J.A. Hornady, E.B. Shils, J.A. Timmons & K.H. Vesper (eds) Frontiers of Entrepreneurship Research, Wellesley Hills, Mass.: Center for Entrepreneurial Studies, Babson College, pp170-187

Kear, S. (1982) "The Role of the Small Business in Industry," Accountancy, Vol. 93, No. 1063, pp54-57

Keeble, D. (1987) "Entrepreneurship, High-technology Industry and Regional Development in the United Kingdom: The Case of the Cambridge Phenomenon," Proceedings of a conference on 'Innovation Diffusion in the Regional Experience of Europe and the United States,' 20 February, University of Naples, Italy

Keeble, D. & Kelly, T. (1986) "New Firms and High-technology Industry in the United Kingdom: The Case of Computer Electronics," in D. Keeble & E. Wever (eds) New Firms and Regional Development in Europe, London: Croom Helm, pp75-104

Keeble, D. & Wever, E. (1986) "Introduction," in D. Keeble & E. Wever (eds) New Firms and Regional Development in Europe, London: Croom Helm, pp1-34

Lothian Regional Council, Industrial Index, Edinburgh, Lothian Region

Lovett, I.N. (1981) "New Ways of Financing Technology and Product Development," Proceedings of a conference on 'Financing More Innovation at Less Risk,' 15-17 December, Luxembourg: Infobrief S.A.R.L., pp75-80

New Scientist (1987) "Taking the Plunge into High Risk Business," Science for Profit: A Venture Capital Report, New Scientist, 8th October, pp8-9

Oakey, R. (1983) "High Technology Industry, Industrial Location and Regional Development: The British Case," in F.E.I. Hamilton & G.J.R. Linge (eds) Spatial Analysis, Industry and the Industrial Environment, London: John Wiley & Sons, pp279-295

Oakey, R.P. (1987) "Entrepreneurship and Regional Industrial Growth in Small High Technology Firms," Proceedings of a conference on 'Innovation Diffusion in the Regional Experience of Europe and the United States,' 20 February, University of Naples, Italy

Oakey, R.P. & Rothwell, R. (1986) "High Technology Small Firms and Regional Industrial Growth," in A. Amin & J.B. Goddard (eds) Technological Change, Industrial Restructuring and Regional Development, London: Allen & Unwin, pp258-283

OECD (1986) Venture Capital: Context, Development and Policies, Paris: Organisation for Economic Co-operation and Development

Ormerod, J. & Burns, I. (1985) "The Risk Capital Market Can Be Rough and Thorny," Accountancy, Vol. 96, No. 1108, pp77-80

Ormerod, J. & Burns, I. (1986) "Corporate Venturing is Good Business," Accountancy, Vol. 98, No. 1119, pp107-108

Pence, C.C. (1982) How Venture Capitalists Make Investment Decisions, Michigan: UMI Research Press

Phillips, E.M. & Pugh, D.S. (1987) How to Get a PhD, Milton Keynes: Open University Press

Reuter, G. (1981) "Financing Technology in the Enterprise," Proceedings of a conference on 'Financing More Innovation at Less Risk,' 15-17 December, Luxembourg: Infobrief S.A.R.L., pp81-90

Roe Stamps, E. (1983) "Industries Attractive to Venture Capitalists," in S.E. Pratt (ed) Guide to Venture Capital Sources, Wellesley Hills, Mass.: Capital Publishing Corp., pp65-67

Rothwell, R. (1981) "Small and Medium Sized Manufacturing Firms and Technological Innovation," in P. Gorb, P. Dowell & P. Wilson (eds) Small Business Perspectives, London: Armstrong Publishing, pp349-359

Sahlman, W.A. & Stevenson, H.H. (1985) "Capital Market Myopia," in J.A. Hornady, E.B. Shils, J.A. Timmons & K.H. Vesper (eds) Frontiers of Entrepreneurship Research, Wellesley Hills, Mass.: Center for Entrepreneurial Studies, Babson College

Saxenian, A. (1985) "Silicon Valley and Route 128: Regional Prototypes or Historic Exceptions," in M. Castells (ed) High Technology, Space, and Society, Beverly Hills, Calif.: Sage Publications, pp81-105

Sayer, A. & Morgan, K. (1986) "The Electronics Industry and Regional Development in Britain," in A. Amin & J.B. Goddard (eds) Technological Change, Industrial Restructuring and Regional Development, London: Allen & Unwin, pp157-187

Schmidt, H. (1984) "Special Stockmarket Segments for Small Company Shares. Situation and Perspectives," in J.M. Gibb (ed) Venture Capital Markets for the Regeneration of Industry, North-Holland: Elsevier Science Publishers B.V., pp97-106

Sibley, A. (1981) "Smaller Businesses: The Stock Exchange Lowers the Hurdles," in P. Gorb, P. Dowell & P. Wilson (eds) Small Business Perspectives, London: Armstrong Publishing, pp109-116

Storey, D. (1980) Job Generation and Small Firms Policy in Britain, London: Centre for Environmental Studies

Storey, D.J. (1981) "Small Firms and the Regional Problem," in P. Gorb, P. Dowell & P. Wilson (eds) Small Business Perspectives, London: Armstrong Publishing, pp309-320

Storey, D.J. (1986) "The Economics of Smaller Businesses: Some Implications for Regional Economic Development," in A. Amin & J.B. Goddard (eds) Technological Change, Industrial Restructuring and Regional Development, London: Allen & Unwin, pp215-232

Stormonth-Darling, R. (1984) "The London 'Unlisted Securities Market,'" in J.M. Gibb (ed) Venture Capital Markets for the Regeneration of Industry, North-Holland: Elsevier Science Publishers B.V., pp142-149

Strong, R.M. (1974) "Raising Finance for the Smaller Company," Accountants Digest, No. 10, pp3-16

Thomas, M.D. (1986) "Growth and Structural Change: The Role of Technical Innovation," in A. Amin & J.B. Goddard (eds) Technological Change, Industrial Restructuring and Regional Development, London: Allen & Unwin, pp115-139

Wallace, P.W. (1983) "Public Financing for Smaller Companies," in S.E. Pratt (ed) Guide to Venture Capital Sources, Wellesley Hills, Mass.: Capital Publishing Corp., pp107-110

Westmacott, S. (1982) "The USM - It's There to be Used!" Accountancy, Vel. 93, No. 1063, pp63-64

Wetzel, W.E. (1983) "Informal Investors - When and Where to Look," in S.E. Pratt (ed) Guide to Venture Capital Sources, Wellesley Hills, Mass.: Capital Publishing Corp., pp23-28

Whiston, T.G. (1983) "Employment Generation: Financing Problems of New, Small and Developing Computer Software (and Related Applications) Companies," University of Sussex: Science Policy Research Unit

Young, A.E. (1984) "The American Over-The-Counter-Market," in J.M. Gibb (ed) Venture Capital Markets for the Regeneration of Industry, North-Holland: Elsevier Science Publishers B.V., pp129-141